



FINNISH NATIONAL
BOARD OF EDUCATION

Requirements for Vocational Qualifications

VOCATIONAL QUALIFICATION IN FORESTRY 2009

Study Programme/Specialisation in Forestry,
Forest Worker/Forest Services Provider

Study Programme/Specialisation in Forest Machine Operation,
Forest Machine Operator

Study Programme/Specialisation in
Forest Machine Installation,
Forest Machine Mechanic

Study Programme/Specialisation in
Forest-Based Energy Production,
Forest-Based Energy Producer

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Vocational upper secondary education and training providers
Qualification committees in the field

REQUIREMENTS FOR VOCATIONAL QUALIFICATIONS

Vocational Qualification in Forestry

REGULATION

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Acts on which the issuing of the Regulation
is based:

Act 630/1998, Section 13 (2)
Decree 811/1998, Section 10 (12)
Act 631/1998 13, Section (2)

Repeals National Board of Education Regulations
–
and for this qualification the following Regulations
15.2.2008 no. 6/011/2008
9.10.2008 no. 31/011/2002

Amends National Board of Education Regulation
–

The Finnish National Board of Education has rendered its decision regarding an amendment to the qualification requirements of the Vocational Qualification in Forestry (national core curriculum and competence-based qualification principles) as follows:

The Study Programme/Specialisation in Forest-based Energy Production is added to the qualification requirements of the Vocational Qualification in Forestry (annexe). The title will be Forest-based Energy Producer. Module 4.3.2 Mechanised timber production and extraction of timber in chapter 4 will be divided into two modules: 4.3.2 Mechanised timber production and 4.3.5 Extraction of timber. Chapter 4 also includes an amendment to Regulation 9.10.2008 no. 31/011/2008. Changes in chapters 1–9 are described in the memorandum.

The Regulation must be observed in all upper secondary education and training (curriculum-based education and training) and competence-based qualifications started after 1 August 2009. All education and training and competence-based qualifications that have started prior to the entry of this Regulation into force may be completed in accordance with Regulation 13.12.2000 no. 71/011/2000 by 31 July 2019, unless otherwise stipulated in other statutes and Regulations.

In curriculum-based education and training, the education provider must draw up and approve a curriculum in compliance with the terms stipulated in these qualification requirements.

In providing education and training leading to a competence-based qualification, the education provider determines the educational content and provision in accordance with the qualification requirements. An opportunity to complete a competence-based qualification must be provided to all candidates.

The education provider, qualification provider and qualification committee shall comply with the terms stipulated in this Regulation and shall not deviate in any way from it.

Director General

Timo Lankinen

Counsellor of Education

Elisabet Kinnunen

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INTRODUCTION

A vocational qualification can be completed both as a curriculum or competence-based qualification. The requirements of a vocational qualification include both the requirements of the upper secondary vocational qualification and the requirements of a competence-based qualification and therefore their terminology has been made more uniform. The requirements of a vocational qualification is a regulation and it guides the providers of both curriculum-based training as well as competence-based qualifications, and the electronic version of the qualification requirements document allows one to distinguish, when necessary, the sections that relate to vocational upper secondary education and training (curriculum-based training) and competence-based training. Chapters 1 and 4 together with the parts describing the vocational field and the value basis in Chapter 9 are common. Chapters 2, 5, 6, 7 and 8 only concern vocational qualifications completed in vocational upper secondary education and training and Chapter 3 those completed as competence-based qualifications.

The term module of a qualification compares with the term of study entity used earlier in curriculum-based training. A qualification consists of vocational study modules and in vocational upper secondary education and training also of core subjects and free choice modules. Additional modules can be included in a qualification when that is necessary in view of working life sector specific or local vocational requirements or the need for in-depth professional skills of the would-be qualification holder.

The requirements of a vocational qualification state the objectives set for the qualification and study programme or specialisation, structure of qualification, module specific skills requirements or objectives, targets of assessment and assessment criteria for core subjects as well as the ways of demonstrating vocational skills in the case of vocational study modules. These requirements also include other provisions concerning vocational upper secondary education and training as well as competence-based qualifications.

The requirements of vocational qualification modules and the objectives of core subjects have been defined as learning outcomes (knowledge, skills, competence). This forms the basis for describing the targets of assessment through mastering the work process, work method, equipment and material as well as underpinning knowledge and the key competences for lifelong learning.

An education provider approves a curriculum for upper secondary vocational education and training based on the qualification requirements. When arranging preparatory training for competence-based qualifications, the provider decides its contents and how to arrange it in compliance with the qualification requirements.

OBJECTIVES AND STRUCTURE OF THE VOCATIONAL QUALIFICATION IN FORESTRY

1.1 OBJECTIVES OF THE VOCATIONAL QUALIFICATION IN FORESTRY

The holder of the vocational upper secondary qualification in forestry is in possession of a wide range of skills for various tasks in forestry and for participating in further studies in the field of forestry. In addition, he/she is in possession of more specialised competence and of the vocational skills required by working-life organisations within one area of specialisation so that the holder of the said qualification is able to take his/her place in working life, carry out the wide range of tasks involved in the sector in question, and also do so under changing circumstances, and engage in the life-long development of his/her vocational skills.

The holder of the vocational upper secondary qualification in forestry is in possession of a comprehensive range of vocational skills and is able to continuously develop those skills. The forestry professional is a person characterised by the following traits: reliability, quality-consciousness, self-initiation, customer-service-orientation, and willingness to collaborate. The forestry professional knows how to apply the skills and knowledge acquired in the ever changing circumstances of the working life. He/she is able to see his/her work as being part of a large whole, and is able to take into account the tasks of professionals performing in related fields when carrying out his/her own work. The forestry professional carries out his/her work in compliance with forestry legislation and the guidelines issued pertaining to silviculture, wood harvesting, and the harvesting of forest-based energy. He/she works in the forest environment observing the principles of sustainable forestry. He/she knows how to plan his/her work, knows how to draw up labour-consumption and cost calculations, and knows how to present and assess his/her own work.

The forestry professional is expected to know how to read plans related both to silviculture and wood procurement. He/she is in possession of the motoric skills required in the field of forestry. When carrying out his/her work, he/she takes into account objectives such as those of sustainable development, of which environmental matters are the foremost. The forestry professional knows how to work in a collaborative manner in different interaction situations and knows how to express his/her views clearly and in a way that promotes a sense of confidence in others.

The forestry professional adheres to and maintains safe methods of work and ways of doing things, and expresses an attitude appreciative of a culture of work safety, which includes consideration of actions promoting work safety, health, and the ability to work.

The forestry professional knows how to take into account amendments in environmental legislation in the carrying out of his/her work. He/she is able to provide answers to questions posed by customers or forest owners on matters such as the environmental effects of different forest regeneration or felling methods. The forestry professional also knows how to apply the IT applications needed in his/her work. He/she also masters the fundamentals of entrepreneurship.

The skills of the forestry professional in the international setting include proficiency in the required foreign language(s) when carrying out international tasks, understanding the cultures of the target countries, a willingness to be of service, and the ability to adapt to different circumstances.

The forest-workers specialised in providing forestry services, who have completed the **Study Programme or Specialisation in Forestry**, knows how to carry out the manual and motor-manual work included in silviculture and wood harvesting, or the work related to ecotourism, for example. The forestry professional specialised in silviculture and wood harvesting knows how to regenerate forests manually by sowing and by planting. Assisted by forest management plans, he/she is able to determine the thinning needs of young stands and thinning stands. In addition, he/she can clear, clean, and thin tree stands in accordance with silvicultural prescriptions. Also, he/she knows how to measure both standing trees and felled timber. The provider of forest-worker and forestry services knows how to use the basic tools used in forestry, how to apply the appropriate work methods, and how to use forest regeneration materials. The forest worker specialised in providing forestry services has several specialisation options open to him/her: ecological and environmental construction, providing forest-related tourism services, and performing as an expert in the multiple-use of forests. He/she is also in a position to engage in further development, and attain a vocational qualification after accumulating practical experience.

A person who has completed the **Study Programme or Specialisation in Forest Machine Operation** can proceed to further specialise in the mechanised procurement of timber, in the extraction of timber, or in the transportation of timber by lorry. The forest machine operator, who has specialised in the mechanised preparation of timber, knows how to prepare timber using a harvester in accordance with harvesting prescriptions and the specified dimensional and quality requirements. The forest machine operator, who has specialised in the extraction of timber, knows how to extract timber using a forwarder in accordance with the extraction plan he/she had drawn up. The forest machine operator, who has specialised in the transportation of

timber by lorry, knows how to extract timber from the forest to the site where it is due to be processed. The forest machine operator knows how to locate and delimit the felling site by using the Global Positioning System and site maps. He/she knows how to use IT devices in his/her work. He/she knows how to carry out tasks related to the use and maintenance of forest machines or log trucks, and how to report on repair needs. He/she also knows how to work in accordance with the enterprise's quality system and operation system. He/she is in possession of the skills needed to engage in self-development and to complete the qualification after having obtained the necessary practical experience.

Assisted by forest machine circuit diagrams and measuring and troubleshooting programs, a person who has completed the **Study Programme or Specialisation in Forest Machine Installation** knows how to determine faults and how to carry out servicing and repair work on the engine, the power transmission, the hydraulics, and the electrical system. He/she knows how to adjust a modern-day harvester's control and measurement system, and how to install the appropriate programs in them. He/she also knows how to test the functionality of a forest machine safely while following instructions and regulations. He/she knows how to use the most common tools and measuring devices used in machine maintenance and repair. A forest machine technician knows how to process the waste produced during maintenance and repair in accordance with the principles of sustainable development.

A person who has completed the **Study Programme or Specialisation in Forest-based Energy Production** knows how to plan, harvest, and store energy wood or energy peat as per his/her specialisation. He/she knows how to carry out the servicing and maintenance work on the machines used in the harvesting of energy wood or energy peat. He/she knows what must be done to comply with the principles of sustainable development and the enterprise's quality system and operation system. The producer of forest-based energy specialising in peat production also knows how to carry out the reconditioning work on a peat-production sites and how to prepare production sites for post-production use. A person who has completed the **Forest-based Energy Production Study Programme or Specialisation** is in possession of the preconditions to engage in self-development and to complete the said qualification after having obtained practical experience.

In addition vocational upper secondary education and training is to support students' development into good and balanced persons and members of society as well as to provide the students with the knowledge and skills needed in view of versatile development of further studies, hobbies and his/her personality as well as to support lifelong learning (Act 630/98, section 5).

1.2 THE STRUCTURE OF THE VOCATIONAL QUALIFICATION IN FORESTRY

THE VOCATIONAL QUALIFICATION IN FORESTRY, 120 CREDITS	
IN VOCATIONAL UPPER SECONDARY EDUCATION	IN COMPETENCE-BASED QUALIFICATION
4. Vocational modules, 90 credits	4. Vocational modules
The modules include a minimum of 20 credits of on-the-job-learning, a minimum of 5 credits of entrepreneurship and a final project (2 credits).	
4.1 Compulsory modules for all, 20 credits	4.1 Obligatory modules for all
4.1.1 Silviculture and timber harvesting, 20 cr	4.1.1 Silviculture and timber harvesting
4.2 Study programme in Forestry, Forest Worker/Forest Services Provider, 70 credits	4.2 Specialisation in Forestry, Forest Worker/Forest Services Provider
4.2.1 Silviculture and timber harvesting services, 40 cr or	4.2.1 Silviculture and timber harvesting services or
4.2.2 Forest nature services, 40 cr	4.2.2 Forest nature services
In addition, a minimum of 30 credits from modules 4.2.3–4.2.13 and 4.6–4.7 (table 1) are to be selected.	In addition, at least three modules from 4.2.3–4.2.13 and 4.5.2 are to be selected so that they equal a total of 30 credits of optional modules (table 1)
4.3 Study Programme in Forest machine Operation, Forest Machine Operator, 70 credits	4.3 Specialisation in Forest machine Operation, Forest Machine Operator
Compulsory module for all	Compulsory module for all
4.3.1 Lorry and forest machine maintenance, 20 cr	4.3.1 Lorry and forest machine maintenance
In addition, one module from 4.3.2–4.3.5 (table 1) is to be selected.	In addition, one module from 4.3.2–4.3.5 (table 1) is to be selected.
4.3.2 Mechanised timber production, 30 cr	4.3.2 Mechanised timber production
4.3.3 Timber transport by lorry, 30 cr	4.3.3 Timber transport by lorry
4.3.4 Mechanised forest improvement work, 30 cr	4.3.4 Mechanised forest improvement work
4.3.5 Extraction of timber, 30 cr	4.3.5 Extraction of timber
4.3.6 Vocational competence at the basic level of transportation, 10 cr	4.3.6 Vocational competence at the basic level of transportation

<p>If 4.3.2 is chosen, 20 credits from modules 4.2.5, 4.3.6, 4.4.3–4.4.5 and 4.5.4–4.7.5 (table 1) are to be chosen as well.</p> <p>If 4.3.3 is chosen, 20 credits from modules 4.2.5, 4.3.6, 4.4.3–4.4.5 and 4.5.4–4.7.5 (table 1) are to be chosen as well.</p> <p>If 4.3.4 is chosen, 20 credits from modules 4.2.5, 4.3.6, 4.4.3–4.4.5 and 4.5.4–4.7.5 (table 1) are to be chosen as well.</p> <p>If 4.3.5 is chosen, 20 credits from modules 4.2.5, 4.3.6, 4.4.3–4.4.5 and 4.5.4–4.7.5 (table 1) are to be chosen as well.</p>	<p>If 4.3.2 is chosen, one of the following alternatives is to be chosen: Alternative 1: 1 module 4.2.5, 4.3.6 and 2 modules from 4.4.3–4.4.5 Alternative 2: 2 modules 4.4.3–4.4.5 (table 1)</p> <p>If 4.3.3 is chosen, one of the following alternatives is to be chosen: Alternative 1: 1 module 4.3.6 and in addition 1 module 4.2.5 or 2 modules 4.4.3–4.4.5 Alternative 2: 1 module 4.3.6 and in addition 1 module 4.5.4–4.6.3 (table 1)</p> <p>If 4.3.4 is chosen, one of the following alternatives is to be chosen: Alternative 1: 1 module 4.2.5, 4.3.6 and in addition 2 modules 4.4.3–4.4.5 Alternative 2: 2 modules 4.5.4–4.6.3 (table 1)</p> <p>If 4.3.5 is chosen, one of the following alternatives is to be chosen: Alternative 1: 1 module 4.2.5, 4.3.6 and in addition 2 modules 4.4.3–4.4.5 Alternative 2: 2 modules 4.5.4–4.6.3 (table 1)</p>
<p>4.4 Study Programme in Forest Machine Installation, Forest Machine Mechanic 70 credits</p> <p>4.4.1 Forest machine servicing, 25 cr, and</p> <p>4.4.2 Forest machine maintenance and repairs, 35 cr</p> <p>In addition, a minimum of 10 credits from modules 4.4.3–4.4.5 and 4.5.4–4.7.5 are to be selected (table 1)</p>	<p>4.4 Specialisation in Forest Machine Installation, Forest Machine Mechanic</p> <p>4.4.1 Forest machine servicing and</p> <p>4.4.2 Forest machine maintenance and repairs</p> <p>In addition, a minimum of two modules from 4.4.3–4.4.5 or one module from 4.5.4–4.6.3 are to be selected (table 1)</p>
<p>4.5 Study Programme in Forest-based Energy Production, Forest-based Energy Producer 70 credits</p> <p>4.5.1 Harvesting and use of forest-based energy materials, 20 cr and</p> <p>4.5.2 Harvesting of energy wood, 30 cr or</p> <p>4.5.3 Peat production and storage, 30 cr</p> <p>In addition, a minimum of 20 credits from modules 4.5.4–4.7.5 (table 1) are to be selected.</p>	<p>4.5 Specialisation in Forest-based Energy Production, Forest-based Energy Producer</p> <p>4.5.1 Harvesting and use of forest-based energy materials</p> <p>4.5.2 Harvesting of energy wood or</p> <p>4.5.3 Peat production and storage</p> <p>In addition, a minimum of two modules from 4.5.4–4.6.3 (table 1) are to be selected.</p>

IN VOCATIONAL UPPER SECONDARY EDUCATION		
5. Core subjects in curriculum-based vocational education and training, 20 credits		
5.1 Compulsory modules for all	Compulsory	Optional
5.1.1 Mother tongue	4 credits	0–4 credits
5.1.2 Second national language	1 credit	0–4 credits
5.1.2.1 Second national language, Swedish	1 credit	
5.1.2.2 Second national language, Finnish	2 credits	
5.1.3 Foreign language	2 credits	0–4 credits
5.1.4 Mathematics	3 credits	0–4 credits
5.1.5 Physics and chemistry	2 credits	0–4 credits
5.1.6 Social, business and labour-market subjects	1 credit	0–4 credits
5.1.7 Physical education	1 credit	0–4 credits
5.1.8 Health education	1 credit	0–4 credits
5.1.9 Arts and culture	1 credit	0–4 credits
5.2 Optional modules		
5.2.1 Optional additional modules to compulsory core subjects, see Chapters 5.1.1–5.1.9 above		
5.2.2 Environmental studies		0–4 credits
5.2.3 Information and communications technology		0–4 credits
5.2.4 Ethics		0–4 credits
5.2.5 Cultural knowledge		0–4 credits
5.2.6 Psychology		0–4 credits
5.2.7 Entrepreneurship		0–4 credits
	16 credits	4 credits
<p>In education provided in Swedish, the scope of studies in the second national language is 2 credits, and the scope of the compulsory core subjects in vocational qualification is 17 credits and the scope of optional modules is 3 credits.</p> <p>The scope of compulsory studies in both physical education and health education is 1 credit. Education provider can divide the compulsory studies in physical education and health education differently, but yet in such a way that their overall scope totals two credits.</p>		
6. Free-choice modules in vocational upper secondary education, 10 credits		
The qualification modules comprise a minimum of 1.5 credits of student counselling		

TABLE 1. VOCATIONAL MODULES					
IN VOCATIONAL UPPER SECONDARY EDUCATION			IN COMPETENCE-BASED QUALIFICATION		
4.1.1	Silviculture and timber harvesting	20 cr	4.1.1	Silviculture and timber harvesting	
4.2.1	Silviculture and timber harvesting services	40 cr	4.2.1	Silviculture and timber harvesting services	
4.2.2	Forest nature services	40 cr	4.2.2	Forest nature services	
4.2.3	Collection and utilisation of forest data	10 cr	4.2.3	Collection and utilisation of forest data	
4.2.4	Sales, servicing and repair of small machinery	10 cr	4.2.4	Sales, servicing and repair of small machinery	
4.2.5	Operating forwarders	10 cr	4.2.5	Operating forwarders	
4.2.6	Further processing of wood	10 cr	4.2.6	Further processing of wood	
4.2.7	Harvesting forest-based energy materials	10 cr	4.2.7	Harvesting forest-based energy materials	
4.2.8	Felling and arboricultural services related to special trees	10 cr	4.2.8	Felling and arboricultural services related to special trees	
4.2.9	Nature tourism	5 cr	4.2.9	Nature tourism	
4.2.10	Hunting tourism	5 cr	4.2.10	Hunting tourism	
4.2.11	Fishing tourism	5 cr	4.2.11	Fishing tourism	
4.2.12	Silvicultural work	10 cr	4.2.12	Silvicultural work	

4.2.13	Business management	5 cr	4.2.13	Business management
4.3.1	Lorry and forest machine maintenance	20 cr	4.3.1	Lorry and forest machine maintenance
4.3.2	Mechanised timber production	30 cr	4.3.2	Mechanised timber production
4.3.3	Timber transport by lorry	30 cr	4.3.3	Timber transport by lorry
4.3.4	Mechanised forest improvement work	30 cr	4.3.4	Mechanised forest improvement work
4.3.5	Extraction of timber	30 cr	4.3.5	Extraction of timber
4.3.6	Vocational competence at the basic level of transportation	10 cr	4.3.6	Vocational competence at the basic level of transportation
4.4.1	Forest machine servicing	25 cr	4.4.1	Forest machine servicing
4.4.2	Forest machine maintenance and repairs	35 cr	4.4.2	Forest machine maintenance and repairs
4.4.3	Operation of forest-improvement machines	5 cr	4.4.3	Operation of forest-improvement machines
4.4.4	Forest machine operation	5 cr	4.4.4	Forest machine operation
4.4.5	Operating energy-wood harvesters	5 cr	4.4.5	Operating energy-wood harvesters
4.5.1	Harvesting and use of forest-based energy materials	20 cr	4.5.1	Harvesting and use of forest-based energy materials
4.5.2	Harvesting of energy wood	30 cr	4.5.2	Harvesting of energy wood
4.5.3	Peat production and storage	30 cr	4.5.3	Peat production and storage
4.5.4	Mechanised timber harvesting	10 cr	4.5.4	Mechanised timber harvesting
4.5.5	Further processing of energy wood	10 cr	4.5.5	Further processing of energy wood
4.5.6	Operation, maintenance and servicing of a heating plant	10 cr	4.5.6	Operation, maintenance and servicing of a heating plant
4.5.7	Peat production	10 cr	4.5.7	Peat production
4.5.8	Short-rotation cultivation	10 cr	4.5.8	Short-rotation cultivation
4.6	Optional modules for all	0–10 cr	4.6	Optional modules for all
4.6.1	Modules from vocational upper secondary qualifications	10 cr	4.6.1	Modules from vocational upper secondary qualifications
4.6.2	Module from further vocational qualifications		4.6.2	Module from further vocational qualifications
4.6.3	Module from specialist vocational qualifications		4.6.3	Module from specialist vocational qualifications
4.6.4	Locally offered modules			
4.7	Other optional modules in vocational upper secondary education and training	0–10 cr		
4.7.1	Entrepreneurship	10 cr		
4.7.2	Workplace instructor training	2 cr		
4.7.3	In-depth and enhancing vocational modules	0–10 cr		
4.7.4	Core subjects	0–10 cr		
4.7.5	General upper secondary studies	0–10 cr		
4.8	Modules providing individual in-depth vocational competence (modules that expand the scope of a vocational upper secondary qualification)		4.8	Modules providing individual in-depth vocational competence (modules that expand the scope of a vocational upper secondary qualification)
4.8.1	Business operations	10 cr	4.8.1	Business operations
4.8.2	Modules from vocational qualifications (vocational upper secondary qualifications, further vocational qualifications and specialist vocational qualifications)		4.8.2	Modules from vocational qualifications (vocational upper secondary qualifications, further vocational qualifications and specialist vocational qualifications)
4.8.3	Locally offered modules providing in-depth vocational competence in curriculum-based vocational education and training			

Principles of a vocational qualification

Vocational qualifications are made up of vocational modules, which are either compulsory or optional. Curriculum-based qualifications also include compulsory and optional core subjects as well as free choice modules. Furthermore, a qualification can be personalised by including more modules, which expand the qualification, when that is necessary from to meet sector specific working life requirements or local vocational needs and to enrich the candidate's vocational skills. Qualification specific rules on optional modules are presented above in the table introducing the Vocational Qualification in Forestry.

Student (curriculum-based training) or candidate (competence-based qualifications) can also include modules from other vocational qualifications in the vocational upper secondary qualification.

To improve his/her eligibility to pursue further studies a student can choose general upper secondary studies, even take the matriculation examination. These studies can compensate for core subjects, other optional qualification modules and free choice studies.

To facilitate making choices and validation of prior learning, the compensation principles for studies completed or to be completed in a general upper secondary school have been described in Section 5 Core subjects. Defining the principles of compensation also promotes cooperation between education providers and the use of common training provision.

Completing the whole qualification is the primary goal in education and training leading to a qualification provided in accordance with the Act on Vocational Education and Training. A student can also take a vocational qualification one or more modules at a time to give a more profession specific result when it is appropriate considering the individual's learning abilities, life situation or employability. The student must have flexible opportunities to complete the qualification at a later date. In these kinds of situations the education provider draws up a plan, preferably in cooperation with the employer, for completing the qualification.

1.3 KEY COMPETENCES FOR LIFELONG LEARNING

These key competences for lifelong learning are taken to mean such competence as is needed in continuous learning, in seizing future and new situations as well as in coping with the changing working life environment. They are an important part of vocational skills and reflect an individual's intellectual flexibility and ability to manage different situations. They increase the vocational civilisation and civic readiness

needed in all fields and help the students or candidates to keep up with the changes in society and working life as well as to act under changing conditions. They also play a major part in one's quality of life and development of personality.

In addition to common emphases of the previous core curriculum of vocational upper secondary education, the Requirements of competence-based qualifications and key competences common to all vocational fields, the key competences for lifelong learning are considered to include cross-curricular themes from basic and general upper secondary education together with the recommendations for the key competences for lifelong learning 2005/0221 (COD) made by the European Union Parliament and the Commission.

The key competences for lifelong learning are included in the objectives of the requirements of vocational qualification modules and their assessment criteria. The key competences for lifelong learning to be assessed separately consist of the following: learning and problem solving, interaction and cooperation, vocational ethics and health, safety and ability to function.

Key competences for lifelong learning are

1. Learning and problem solving
2. Interaction and cooperation
3. Vocational ethics
4. Health, safety and ability to function
5. Initiative and entrepreneurship
6. Sustainable development
7. Aesthetics
8. Communication and media skills
9. Mathematics and natural sciences
10. Technology and information technology
11. Active citizenship and different cultures

Description of the key competences for lifelong learning

Learning and problem solving

The student or candidate plans his/her activities and develops himself/herself and the work. He/she assesses his/her own competence, solves problems and makes decisions and choices in his/her work. Student/candidate is adaptive, innovative and creative in his/her line of work, acquires information and analyses, assesses and applies it.

Interaction and cooperation

The student or candidate acts appropriately in different interactive situations and also expresses different views clearly, constructively and in a way that creates confidence. He/she works cooperatively with different people and as a member of a team and also treats all people equally. He/she observes common rules of behaviour and regulations. He/she makes use of the feedback given.

Vocational ethics

The student or candidate observes the value basis of the profession. He/she is committed to his/her work and acts responsibly following the contracts made and work ethics.

Health, safety and ability to function

The student or candidate acts safely and responsibly at work and leisure as well as in traffic and also leads a healthy life and maintains his/her ability to function and work. He/she works ergonomically and takes physical exercise needed in the profession and also acts in a manner that prevents the dangers and health hazards in the working environment.

Initiative and entrepreneurship

The student or candidate works towards completing the objectives set. He/she takes initiative and acts in a customer-oriented way as an employer and/or entrepreneur. He/she plans activities and works to reach the objectives set. He/she acts economically and is result-orientated. He/she sets personal goals in line with the overall objectives.

Sustainable development

The student or candidate acts according to the ecological, economical, social and cultural principles of sustainable development in the profession. He/She observes the rules, regulations and contracts of sustainable development prevailing in the sector.

Aesthetics

The student or candidate takes into consideration the aesthetic factors in his/her line of work. He/she contributes to and maintains the niceness and aesthetics of the working environment.

Communications and media skills

The student or candidate uses his/her language skills in a way that is appropriate, varied and interactive considering the situation. Student/candidate observes, interprets and assesses different media products critically. He/she uses the media and information technology as well as produces media material.

Mathematics and natural sciences

The student or candidate uses basic mathematics to solve mathematic equations at work and in everyday life. He/she uses for example formulas, graphs, patterns and statistics to help solve work related assignments and problems. Student/candidate applies methods and practices that are based on the laws of physics and chemistry at work.

Technology and information technology

The student or candidate makes versatile use of technologies used in his/her profession. He/she considers the technological benefits, limitations and risks. He/she makes versatile use of computer technology as a professional and a citizen.

Active citizenship and different cultures

The student or candidate participates constructively in the activities and decision making of the community. He/she acts according to his/her rights and responsibilities both at work and in everyday life. He observes the acts on equality. He/she acts appropriately and considering the requirements of working life with people from different cultural backgrounds both at home and in international operations.

1.4 ELIGIBILITY FOR FURTHER STUDIES

According to Paragraph 4 of the Vocational Education and Training Act, vocational upper secondary studies grant the student eligibility to further his/her studies in universities or universities of applied sciences.

IMPLEMENTATION OF NATIONAL REQUIREMENTS IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING

2.1 DESIGN AND CONTENTS OF THE CURRICULUM

According to the Vocational Education and Training Act (630/1998, section 14) the education provider must endorse for its training a curriculum that is based on the qualification requirements mentioned in this document. It must contain the procedures that ensure that the education reaches the tasks and objectives (Act 630/1998, section 5). A curriculum must be approved separately for education provided in Finnish, Swedish and Saami and also for education in any other language when necessary. The curriculum of an education provider is a public document. The curriculum regulates and directs the education offered by the provider and all other activities closely related to it. To give the student protection under the law, the curriculum must provide adequate information about the modules and studies included in the qualification, assessment and arrangements concerning completion of the studies. The curriculum must be compiled so that it enables the students to individually select vocational studies as well as to complete general upper secondary studies and the matriculation examination. The curriculum also acts as a basis for internal and external evaluation and also allows evaluating the effectiveness of the education offered by the education provider.

The education provider reserves the recourses needed for the education. The education provider also sees that the curriculum allows the student to achieve the objectives set for the qualification, to receive enough teaching and counselling he/she needs regardless of the way the education is organized on each workday, also during on-the-job learning and skills demonstrations.

The curriculum consists of the common part for all the fields of vocational education and training and qualification specific part of the curriculum.

2.1.1 Common part of the curriculum

The common principles and procedures for all the upper secondary qualifications and core values of the education provider are defined in the common part of the curriculum.

The common part of the curriculum consists of at least

- ◆ providing education and training as curriculum-based vocational education and training, as training arranged at a workplace in connection with practical work assignments and as apprenticeship training (Act 630/1998, sections 3, 15 and 17)
- ◆ arranging education and training as contact teaching, distance, multi-modal (Act 630/1998, sections 15) and e-learning
- ◆ plans and methods for completing a module or modules as well as students' opportunities to add on to their studies and complete the whole qualification
- ◆ providing education in cooperation with other education providers and working life (Act 630/1998, sections 14 and 10)
- ◆ teaching related measures promoting community spirit, which provides an opportunity for reflecting values and getting to know our cultural heritage (Decree 811/1998, sections 9)
- ◆ common practices on performing student assessment (Act 601/2005, section 25a) in accordance with Chapter 7
- ◆ compliance with the regulations of Chapter 8
- ◆ staff development plan.

The education provider must include plans on how to promote equality, non-discrimination and sustainable development in the curriculum. When organising the education the education provider must also take into account the obligations in other statutes concerning education and training.

2.1.2 Qualification specific part of the curriculum

The qualification specific part of the curriculum determines the organisation of the vocational qualification modules and the core subjects, in cooperation with other education providers and working life. It also determines the timing of the education, learning environments and teaching methods, with the help of which the student can achieve the vocational skills requirements and objectives of the qualification.

The qualification specific part also lists the studies the training provider offers from other qualifications as well as the student's opportunities to complete more than one qualification. It includes the decision on the assessment plan for the vocational modules and core subjects, which is to include skills demonstrations and other assessment of competence.

Qualification specific part of the curriculum is to cover at least

- ◆ structure of the qualification of compulsory and optional vocational modules and core subjects
- ◆ progression, timing and sequence of studies
- ◆ provision of free choice modules
- ◆ a plan on the provision of individual in-depth vocational modules (modules enhancing a vocational upper secondary qualification)
- ◆ a plan on assessment of the modules and methods used for assessment of competence
- ◆ a plan on assessing vocational modules in a way that it includes a plan on implementation and assessment of skills demonstrations approved by the local board for vocational skills demonstrations
- ◆ locally offered modules, their skills requirements, targets of assessment and criteria as well as the objectives, targets of assessment and assessment criteria for the additional optional modules of compulsory core subjects.

2.1.3 Individual study plan

Vocational Education and Training Act (Act 630/1998, section 14) contains the provision of a student's right to make individual choices in his/her studies. Vocational Education and Training Decree (Decree 811/1998, sections 3, 4 and 12a) contains the provision of how to inform students of the training offered, of student counselling and recognition and validation of prior skills. In order that a student's right to make individual choices is possible, the education provider must prepare the student an individual study plan based on his/her individual starting point and update it throughout the training offered.

COMPLETING A VOCATIONAL QUALIFICATION AS A COMPETENCE-BASED QUALIFICATION

3.1 GENERAL ON COMPETENCE-BASED QUALIFICATION SYSTEM

The competence-based qualification system offers adults a flexible way of demonstrating, renewing and maintaining their vocational competence, or when duties change, qualifying for a new profession. In a competence-based qualification a person's vocational competence can be nationally and quality-wise acknowledged despite whether the skills have been acquired through working experience, studies or other activities. In the competence-based qualification system the employer side, employee side and the training sector work in close cooperation when developing the qualification structure, drawing up qualification requirements, planning and arranging competence tests as well as when assessing test performances.

Vocational qualifications, further and specialist vocational qualifications can be completed as competence-based qualifications. The Requirements of competence-based qualifications describe vocational skills as working life competence requirements. The qualifications are made up of modules, which are independent work entities.

3.2 ARRANGING COMPETENCE-BASED QUALIFICATIONS

The qualification committees appointed by the National Board of Education and comprising the representatives of employers, employees, teachers and when necessary self-employed persons, are responsible for arranging and controlling competence-based qualifications and they award qualification certificates. The qualification committees sign contracts on arranging competence-based qualifications with education providers and when necessary other communities and foundations. Competence-based qualifications must not be arranged without a valid contract with the qualification committee concerned.

3.3 COMPLETING A COMPETENCE-BASED QUALIFICATION

A competence-based qualification is completed by successfully demonstrating the skills required in practical work assignments and activities in a competence test. Each module must be assessed separately. Assessment is jointly carried out by representatives of employers, employees and the training sector. In vocational fields where self-employment is typical, this party is also to be considered when appointing assessors. The qualification committee passes the final decision on assessment. A qualification certificate can be awarded when all the modules required to make up the qualification have been completed successfully.

3.4 REQUIREMENTS OF COMPETENCE-BASED QUALIFICATIONS

The Requirements of competence-based qualifications define the modules to be included in the qualification and possibly the structure of specialisation, qualification contents, vocational skills required in each module, bases of assessment (targets and criteria of assessment) as well as ways of demonstrating vocational competence.

A module is a vocational sub-entity, which can be discerned as a separately assessed entity in a natural work process. The vocational skills requirements defined in modules focus on profession specific key activities, control of processes and vocational practices relevant in the field concerned. They include the skills commonly required in working life, social skills for example.

Targets of assessment and criteria are derived from the vocational skills requirements. Targets of assessment define the sectors of competence that special attention will be paid to. Defining the targets of assessment also make it easier to assess vocational competence in the work activity concerned. Assessment must cover all the targets listed in the Requirements of competence-based qualifications. Assessment criteria determine the quality and quantity levels for a successful performance.

The ways of demonstrating vocational skills include further instructions on how to complete a qualification. The vocational skills are, in the main, demonstrated in actual work assignments or tasks. The ways of demonstrating vocational skills may also include, for example, instructions on how a test performance can be supplemented, if necessary, in order for all the skills requirements to have been successfully met.

3.5 INDIVIDUALISATION IN COMPETENCE-BASED QUALIFICATIONS

Education provider is responsible for individualising the enrolment for a competence-based qualification and for preparatory training, completing the qualification as well as the acquisition of the vocational skills required. The National Board of Education has issued a separate regulation on individualisation.

3.6 ASSESSMENT OF VOCATIONAL SKILLS IN A COMPETENCE-BASED QUALIFICATION

The assessment of vocational skills must profoundly and carefully look into how the qualification candidate has shown that he/she masters what the skills requirements of the module concerned prescribe. The assessment criteria defined in the requirements for the competence-based qualification are to be used. In assessment, a variety of different and primarily qualitative assessment methods should be used. Using one method only does not necessarily yield a reliable result. Vocational field and qualification specific special features are taken into consideration in the assessment process in accordance with the qualification requirements.

If a person completing a qualification has reliable evidence of competence demonstrated earlier, the assessors assess its correspondence with the skills requirements described in the requirements for the competence-based qualification. The assessors suggest the document to the qualification committee for recognition as part of a competence-based qualification. If the candidate has earlier demonstrated his/her skills in one of the modules of this qualification either in curriculum-based education or in a competence-based qualification, the earlier completed qualification or its module must be presented for recognition as part of the competence-based qualification to be completed. There is no general time limit to be set for the skills acquired and demonstrated earlier but the validity of such skills can be verified. The qualification committee makes the final decision on the recognition of earlier demonstrated and reliably documented skills. If necessary, the candidate must demonstrate the correspondence of his/her skills with the skills requirements of the qualification in question.

Assessing vocational skills is a process where collecting assessment material and documenting the assessment process are of key importance. The representatives of working life and teachers carry out a careful and comprehensive tri-partite assessment. Every person completing a qualification must learn the assessment criteria. The candidate must be given an opportunity to self-assess his/her performance. The provider of a competence-based qualification must draw up minutes of the assess-

ment of the module, which must be signed by the assessors. The candidate is given feedback as part of a good assessment process. The qualification committee makes the final decision on assessment.

Assessors

The persons assessing the qualification candidate's vocational skills are to have good vocational skills themselves in the area of the competence-based qualification in question. The qualification committee and the provider of the competence-based qualification agree on the assessors in the contract for arranging competence-based qualifications.

Rectification of assessment

A person completing a qualification can, within the time limit specified by law, request rectification of assessment from the qualification committee whose sector the qualification in question falls in. A written request of rectification is addressed to the qualification committee. Having heard the assessors, the committee can oblige them to carry out a reassessment. A qualification committee decision on a claim for rectification of assessment cannot be appealed.

3.7 CERTIFICATES

Qualification committee awards a qualification certificate or a certificate on completion of a module or modules. A representative of the education provider issues a certificate on completed preparatory training respectively. "The National Board of Education has issued a regulation on the information to be included in the certificates.

A certificate on the completion of a qualification module or modules is awarded at the request of a person completing a competence-based qualification. The representatives of the qualification committee and the education provider sign the qualification certificate or a certificate given after the completion of a module or modules.

An entry in the Certificate of Vocational Skills approved by the National Board of Education in proof of completion of a competence-based qualification is comparable to a qualification certificate. The provider of the competence-based qualification acquires and signs the Certificate of Vocational Skills. A Certificate of Vocational Skills is subject to a fee.

3.8

PREPARATORY TRAINING FOR COMPETENCE-BASED QUALIFICATIONS

In the case of a competence-based qualification no preconditions to attend preparatory training can be set. However, these qualifications are primarily taken in connection with such preparatory training. The education provider decides on the contents and arrangement of preparatory training for competence-based qualifications in compliance with the qualification requirements. The training and tests must be structured according to the qualification modules to be completed. A person attending such preparatory training must be provided an opportunity to participate in competence tests and complete the qualification as part of the training.

4

VOCATIONAL MODULES, VOCATIONAL SKILLS REQUIREMENTS AND ASSESSMENT OF THE VOCATIONAL QUALIFICATION IN FORESTRY

4.1 COMPULSORY MODULES FOR ALL

4.1.1 Silviculture and timber harvesting

Vocational skills requirements

The student or candidate knows how

- ◆ to plan a feasible marked stand
- ◆ to measure and estimate tree stands
- ◆ to plan and to carry out silvicultural work, and to use machines, devices, and tools commonly used in these kinds of work
- ◆ to tend young stands and to carry out improvement tending in young thinning stands
- ◆ to prepare timber motor-manually
- ◆ to repair and service the tools and equipment used in silviculture and wood harvesting
- ◆ to determine site types, development classes, indicator plants, and the foremost indigenous tree species
- ◆ to determine the various actors in the field of forestry, the operating environment, and the principles of operation.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Measuring and estimating tree stands	measures and estimates tree stands related to his/her work under guidance using commonly used measuring and estimation tools	measures and estimates tree stands related to his/her work almost independently using commonly used measuring and estimation tools	measures and estimates tree stands related to his/her work independently and with care using commonly used measuring and estimation tools
Carrying out of silvicultural work	carries out the regeneration of a forest regeneration site under guidance	carries out the regeneration of a forest regeneration site independently and with care while following given instructions, and uses the correct seed material or planting material	carries out the regeneration of a forest regeneration site independently and with care, and uses the correct seed material or planting material
	tends young stands and tends and carries out improvement thinning of young thinning stands under guidance	tends young stands and tends and carries out improvement thinning of young thinning stands representing typical such sites independently and with care while following given instructions	tends young stands with care and tends and carries out improvement thinning of young thinning stands independently and always with care and in a quality manner while following given instruction
Planning of stand(s) in preparation for harvesting and planning of wood harvesting	carries out, under guidance, the field work required for the planning of stand(s) in preparation for wood harvesting and planning of wood harvesting, and makes use of the necessary road and topographic maps, and at various stages takes into account, under guidance, the ecologically important habitats and their importance for wildlife, and hazardous elements within the stand(s) to be harvested	carries out, almost independently and assisted by given instructions, the field work required for the planning of stand(s) in preparation for wood harvesting and planning of wood harvesting, and makes use of the necessary road and topographic maps, and at various stages takes into account, almost independently, the ecologically important habitats and their importance for wildlife, the foremost aesthetic factors, and hazardous elements within the stand(s) to be harvested	carries out, independently and assisted by given instructions, the field work required for the planning of stand(s) in preparation for wood harvesting and planning of wood harvesting, and makes use of the necessary road and topographic maps, and at various stages takes into account independently the ecologically important habitats and their importance for wildlife, the foremost aesthetic factors, and hazardous elements within the stand(s) to be harvested

Taking aesthetic values into account	utilises, in part, the information in forest management plans and takes into account the impact of wood harvesting equipment on the planning and realisation of wood harvesting	utilises, for the most part, the information in forest management plans and takes into account the impact of wood harvesting equipment on the planning and realisation of wood harvesting	utilises the necessary information in forest management plans and takes into account the impact of wood harvesting equipment on the planning and realisation of wood harvesting
Self-Initiative and diligence	demonstrates self-initiative in his/her work and is mostly motivated	demonstrates self-initiative in his/her work, is mostly diligent and motivated	demonstrates self-initiative in his/her work, is diligent, motivated, and values his/her work
Identification of wild berries and mushrooms	identifies the most common regional wild berries and some of the commercial wild mushrooms.	identifies the region's wild berries and the foremost commercial wild mushrooms	identifies well the region's wild berries and commercial wild mushrooms
Taking into account of ecologically important forest habitats, sustainable development	under guidance, takes into account instructions and recommendations regarding the preservation of ecologically important forest habitats and biodiversity, forest treatment, and the environmental impacts of forestry	almost independently, takes into account the foremost instructions and recommendations regarding the preservation of ecologically important forest habitats and biodiversity, forest treatment, and the environmental impacts of forestry	independently, takes into account the foremost instructions and recommendations regarding the preservation of ecologically important forest habitats and biodiversity, forest treatment, and the environmental impacts of forestry
Assessment of own work	assesses his/her own work under guidance and his/her personal development	assesses his/her own work and personal development in accordance with the given criteria	assesses in a comprehensive manner his/her own work outcome and personal development in accordance with the given criteria
Decision-making	makes the correct decisions and proceeds logically when carrying out tasks that reoccur frequently	makes mostly the correct decisions and proceeds logically when carrying out tasks	makes decisions quickly and correctly, and proceeds logically when carrying out tasks
Active citizenship and different cultures	assumes a positive attitude to people with different ethnic backgrounds.	assumes a positive attitude to people with different ethnic backgrounds.	assumes a positive attitude to people with different ethnic backgrounds.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Management of work methods that are safe and ergonomic	identifies, in part, the hazardous elements related to the work environment and methods and tools	identifies and mostly takes into account the hazardous elements related to the work environment and methods and tools	identifies and takes into account the hazardous elements related to the work environment and methods and tools
	uses, under guidance, forestry tools in a safe manner and applies ergonomically appropriate work methods, and services and repairs the tools and equipment needed in his/her work and does this acceptably.	uses forestry tools almost independently and in a safe manner and applies ergonomically appropriate work methods, and services and repairs according to instructions the tools and equipment needed in his/her work and does this with care.	uses forestry tools independently and in a safe manner and applies ergonomically appropriate work methods, and services and repairs the tools and equipment needed in his/her work and does this with care and proficiency.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Natural forest development	describes, under guidance, the stages of the natural development and succession of the forest, and knows, in part, the fundamentals of forest ecology	describes the foremost stages of the natural development of the forest and its succession, and knows, for the most part, the fundamentals of forest ecology	describes the stages of the natural development of the forest and its succession, and thoroughly knows the fundamentals of forest ecology
Identification of forest types and indicator plants	identifies, in part, the soil types of mineral soils and knows the main features of the classification of peat soils and the foremost commercial utilisation possibilities	identifies the most common soil types of mineral soils and soil structure, and knows the main features of the classification of peat soils and the foremost commercial utilisation possibilities	identifies well the soil types of mineral soils and soil structure, and knows the main features of the classification of peat soils and the foremost commercial utilisation possibilities
	identifies, under guidance, the site types and forest types of the local region of operation	identifies, almost independently, the site types and forest types of the local region of operation	identifies independently and reliably the site types and forest types of the local region of operation

Identification of the features of ecologically important habitats and their indicator plants	identifies the most common indicator plants of the local region of operation and the foremost features and indicator plants of the most common ecologically important habitats	identifies the most common forest plants and indicator plants of the local region of operation and the features and indicator plants of the most common ecologically important habitats	identifies and knows the most common forest plants and indicator plants of the local region of operation, and identifies the features and indicator plants of the ecologically important habitats
Selection of tree species	identifies the foremost tree species and describes, under guidance, their uses	identifies the foremost tree species and acceptably describes their structure, properties, and foremost uses	identifies the foremost tree species and fully describes their structure, properties, and uses
	justifies, under guidance, the selection of tree species and stand densities related to his/her work taking into account the ecological and commercial bases of silviculture	justifies, for the most part, the selection of tree species and stand densities related to his/her work taking into account the ecological and commercial bases of silviculture	justifies in various reliable ways the selection of tree species and stand densities related to his/her work taking into account the ecological and commercial bases of silviculture
Identification of stand development classes and their silvicultural objectives	identifies, under guidance, stand development classes and knows the silvicultural and commercial objectives of each development class	identifies distinctly-featured stand development classes and knows in an acceptable manner the silvicultural and commercial objectives of each development class	identifies stand development classes and knows the silvicultural and commercial objectives of each development class
Employers and operations within the fields of forestry and the wood-based industries	lists, in part, the various forms of use and possibilities in the conversion of wood and timber assortments	lists the foremost forms of use and possibilities to use wood and timber assortments when converting wood	thoroughly knows and over a wide scope the different forms of use and possibilities to use wood and timber assortments when converting wood
	retrieves and analyses, under guidance, information about employers and operations in the field of wood harvesting and wood conversion, and about the employment opportunities offered by them	retrieves and analyses, almost independently, information about employers and operations in the field of wood harvesting and wood conversion, and about the employment opportunities offered by them	retrieves and independently analyses information about employers and operations in the field of wood harvesting and wood conversion, and about the employment opportunities offered by them
	knows, in part, also the position of other central forestry actors in the field of forestry	knows the basic structure of forestry entrepreneurship and the position of other central actors in the field of forestry, and their operational objectives in the forest sector	knows the basic structure of forestry entrepreneurship and the position of other central actors in the field of forestry, and their operational objectives and the trends in the forest sector

Premises of planning in marking out stands and of wood harvesting	states, under guidance, the foremost silvicultural and commercial premises for the planning of marked stands and of wood harvesting	states and provides justification for, for the most part, the foremost silvicultural and commercial premises for the planning of marked stands and of wood harvesting	states and provides in a versatile manner justification for the foremost silvicultural and commercial premises for the planning of marked stands and of wood harvesting
The trade in timber	describes, under guidance, the various forms of the trade in timber	describes the central aspects of the various forms of the trade in timber and presents, for the most part, their appropriateness to the case in question	describes thoroughly the central aspects of the various forms of the trade in timber and presents their appropriateness to the case in question
Forest treatment with consideration for the requirements of forest nature management	describes, in part, the foremost principles and methods of forest regeneration and growing of forests	describes, in an acceptable manner, the foremost principles and methods of forest regeneration and growing of forests	describes thoroughly the foremost principles and methods of forest regeneration and growing of forests
	states, for the most part, the premises of forest legislation and forest certification, and the qualitative and commercial objectives of growing of forests	states the premises of forest legislation and forest certification, and the foremost qualitative and commercial objectives of growing of forests	states the premises of forest legislation and forest certification, and the qualitative and commercial objectives of growing of forests
Taking the needs of wildlife habitats into consideration	knows, in part, the habitats of the region's foremost important game animals and protected animals, and is able, under guidance, to take into account the habitat requirements of game and protected animals when carrying out forestry tasks	knows the habitats of the region's foremost important game animals and protected animals, and is able, almost independently, to take into account the habitat requirements of game and protected animals when carrying out forestry tasks	knows the habitats of the region's foremost important game animals and protected animals, and is able independently to take into account the habitat requirements of game and protected animals when carrying out forestry tasks
	acquires the information required for the planning of marked stands.	acquires a diversity of information required for the planning of marked stands.	acquires the information required for the planning of marked stands efficiently and analyses and uses this information in different ways.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety and ability to function	The student or candidate		
	dresses in accordance with work and weather conditions	dresses in accordance with work and weather conditions	dresses in accordance with work and weather conditions
	uses personal protection equipment	uses personal protection equipment	uses personal protection equipment
	carries out his/her work so that it does not cause immediate danger to self or to others	carries out his/her work so that it does not cause immediate danger to self or to others and acts appropriately in cases of accidents	carries out his/her work so that it does not cause immediate danger to self or to others and acts appropriately in cases of accidents, hazardous and threatening situations
First Aid	knows how to administer basic first aid		
Health, safety and ability to function	knows how to make the notifications required when accidents happen		
Interaction and cooperation	discusses his/her work under guidance.	discusses his/her work proactively.	discusses his/her work independently and is in possession of good listening skills.

Ways of demonstrating vocational skills

The student or candidate demonstrates their vocational skill by planning marked stands. In addition, candidate will regenerate (by planting or sowing) a site, carry out a thinning operation and produce various timber assortments. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ♦ mastering the work process: planning of stand(s) in readiness for harvesting and planning of wood harvesting
- ♦ mastering the work method, equipment and material: management of work methods that are safe and ergonomic
- ♦ underpinning knowledge: identification of development classes and premises of the planning of marked stands and wood harvesting
- ♦ key competences for lifelong learning: competence related to work safety and health, interaction and cooperation

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2 STUDY PROGRAMME OR SPECIALISATION IN FORESTRY

4.2.1 Silviculture and timber harvesting services

Vocation skills requirements

The student or candidate knows how

- ◆ to carry out silvicultural and wood harvesting work while taking into account the requirements of ecosystem management
- ◆ to make use of forest management plans and applying silvicultural recommendations and the regulations of the Forest Act
- ◆ to regenerate forest stands, tend young stands, and treat young thinning stands
- ◆ to plan marked stands and to carry out wood harvesting in such stands
- ◆ to estimate and to measure the stand parameters needed in different types of work
- ◆ to determine the per hectare yield of timber within a felling site
- ◆ to work as an operator in timber extraction
- ◆ to cost calculate one's labour input
- ◆ to identify the various hazards related to forestry work and the forest as a working environment and to anticipated the hazards and to protect oneself from them
- ◆ to adhere to the legislation and instructions related to occupational health and safety in the field of forestry
- ◆ to plan and to carry out forestry and wood harvesting processes both as an employee and an entrepreneur.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of the work site	applies, under guidance, forest management plans, silvicultural recommendations, and the provisions of the Forest Act on various work sites, and plans and carries out the most common silvicultural and wood harvesting work adhering to the same Act	applies, almost independently, forest management plans, silvicultural recommendations, and the provisions of the Forest Act on typical work sites, and plans and carries out silvicultural and wood harvesting work adhering to the same Act	independently applies forest management plans, silvicultural recommendations, and the provisions of the Forest Act on typical work sites, and plans and carries out silvicultural and wood harvesting work adhering to the same Act
	estimates or measures, under guidance, the necessary parameters for the different types of work, and determines hectare-specifically the yield of timber for the site to be treated	estimates or measures the necessary parameters for the different types of work almost independently, and determines hectare-specifically and by timber assortment the yield of timber for the site to be treated	estimates or measures the necessary parameters for the different types of work independently, and determines hectare-specifically and by timber assortment the yield of timber for the site to be treated
Regeneration work	determines under guidance, a stand's maturity for regeneration in the field	determines almost independently, a stand's maturity for regeneration in the field	determines independently a stand's maturity for regeneration in the field
	completes at least one of the regeneration tasks in accordance with instructions	completes, almost independently, the regeneration tasks in accordance with instructions: clearing of the regeneration site, intermediary storage of seed and planting material, sowing and planting work, and advance estimation of the need for early tending of the young stand, and carrying out of the required early tending of the young stand	completes, independently and speedily the regeneration tasks in accordance with instructions: clearing of the regeneration site, intermediary storage of seed and planting material, sowing and planting work, and advance estimation of the need for early tending of the young stand, and carrying out of the required early tending of the young stand
Work involved in the tending of a young stand	plans the tending of and tends young stands in easy locations in accordance with instructions	plans the tending of and tends young stands almost independently in accordance with instructions	plans the tending of and tends young stands independently and speedily and in accordance with instructions
Treatment of thinning stands	treats thinning stands in easy locations in accordance with instructions	determines, plans, and carries out the treatment of thinning stands almost independently and in accordance with instructions	determines, plans, and carries out the treatment of thinning stands independently and in accordance with instructions

Motor-manual preparation of different timber assortments	prepares the most common timber assortments customer-specifically, and measures the prepared timber assortments using measuring methods in general use	prepares timber assortments almost independently and customer-specifically, and measures the prepared timber assortments using measuring methods in general use	prepares timber assortments independently and customer-specifically and measures the prepared timber assortments using measuring methods in general use
Extraction	functions, under guidance, as part of a mechanised wood harvesting chain and uses the global positioning and communication systems related to his/her work	functions almost independently as part of a mechanised wood harvesting chain and uses the global positioning and communication systems related to his/her work	functions independently as part of a mechanised wood harvesting chain and uses the global positioning and communication systems related to his/her work
Utilisation of technology and information technology	masters the use of a forwarder to such an extent that he/she is able to drive and make loads under guidance in easy forest terrain	masters the use of a forwarder to such an extent that he/she is able to drive and make loads almost independently	masters the use of a forwarder to such an extent that he/she is able to drive and make loads independently in normal terrain
Forest improvement work	carries out at least one silvicultural forest improvement work in accordance with instructions	carries out, almost independently, various types of silvicultural forest improvement work in accordance with instructions	carries out, independently and promptly, various types of silvicultural forest improvement work in accordance with instructions
Pricing and customer service related to forestry work and forestry services integrated with various types of work	prices various types of work under guidance	prices various types of work almost independently	prices various types of work independently
	comprehends, in part, the fundamentals of profitable entrepreneurship and calculates, under guidance, the expenses and revenues	comprehends, for the most part, the fundamentals of profitable entrepreneurship and calculates, almost independently, the expenses and revenues	comprehends thoroughly the fundamentals of profitable entrepreneurship and calculates independently the expenses and revenues
	takes the customer's needs partly into account in his/her work	takes the customer's needs, for the most part, into account in his/her work	takes the customer's needs into account in his/her work, both enterprise-specifically and customer-specifically
		provides information on and markets services in an acceptable manner	provides information on and markets services in a situation-specific manner

Taking into account ecologically important habitats and silvicultural recommendations Sustainable development	takes into account the ecologically important habitats as set out in the regulations and the ecosystem and silvicultural recommendations applying to commercial forests when carrying out silvicultural work and wood harvesting	takes into account, almost independently, the ecologically important habitats as set out in the regulations and the ecosystem and silvicultural recommendations applying to commercial forests when carrying out silvicultural work and wood harvesting	takes into account, independently the ecologically important habitats as set out in the regulations and the ecosystem and silvicultural recommendations applying to commercial forests when carrying out silvicultural work and wood harvesting
Self-initiative and diligence	carries out routine jobs applying a self-initiative approach and being mainly well motivated	carries out his/her work applying a self-initiative approach and being mainly diligent and well-motivated	carries out his/her work applying a self-initiative approach and being diligent and well-motivated
Self-assessment	assesses his/her performance in an acceptable way	assesses his/her performance and development in an acceptable way	assesses his/her performance and development in a critical and realistic way
Decision-making	mostly makes correct decisions and proceeds logically when carrying out his/her frequently repeated tasks	makes correct decisions and proceeds logically when carrying out his/her tasks	makes speedy and correct decisions and proceeds logically when carrying out his/her tasks
Presentation of work and reporting Communication and media know-how	presents and reports the results of his/her work in brief.	presents and reports the results of his/her work logically and clearly.	presents and reports and provides the grounds for the results of his/her work logically and clearly.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Safe and ergonomic work methods and skills	works and uses forestry tools in a safe manner and uses ergonomically appropriate work methods, taking the foremost hazardous elements into account services and repairs tools and equipment as per instructions	works and uses forestry tools independently in a safe manner, taking hazardous elements into account and uses ergonomically appropriate work methods and services and repairs tools and equipment as per instructions	works and uses forestry tools independently in a safe manner, taking hazardous elements into account and uses ergonomically appropriate work methods services and repairs tools and equipment as per instructions
	carries out daily forwarder maintenance safely under guidance	carries out daily forwarder maintenance safely and almost independently and, under guidance, conducts minor repairs	carries out daily forwarder maintenance safely and independently and, under guidance, conducts minor repairs

Technological and information technology competence	uses various audio-visual tools and presentation methods fairly well when reporting on the results of his/her work.	uses various audio-visual tools and presentation methods when reporting on the results of his/her work.	uses various audio-visual tools and presentation methods expertly when reporting on the results of his/her work.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Pricing of forestry work and customer service integrated into various types of work	knows his/her field of work to be able to utilise, under guidance, the opportunities it offers as an employee	knows his/her field of work thoroughly enough to be able to utilise, almost independently, the opportunities it offers as an employee	knows his/her field of work thoroughly enough to be able to utilise independently the opportunities it offers as an employee or as an entrepreneur
	knows, in part, the special characteristics of providing forestry services and the preconditions for economic operation, and the pricing of these services	knows, for the most part, the special characteristics of providing forestry services and the preconditions for economic operation, and the pricing of these services	knows the special characteristics of providing forestry services and knows the preconditions for economic operation, and the pricing of these services
	knows, in part, the possibilities enabled by networking and utilises these possibilities under guidance in his/her work	knows, for the most part, the possibilities enabled by networking and utilises these possibilities, almost independently, in his/her work	knows the possibilities enabled by networking and utilises these possibilities independently in his/her work
Initiative and entrepreneurship	knows, in part, the employment and social security regulations relevant to forestry and knows the foremost contents of the collective labour agreement.	knows, for the most part, the foremost employment and social security regulations relevant to forestry and knows the foremost contents of the collective labour agreement.	knows the foremost employment and social security regulations relevant to forestry and knows the foremost contents of the collective labour agreement.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and the ability to function			
Appreciation of safe and responsible operation	has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently

Maintaining a healthy lifestyle and the ability to function and work	conducts himself/herself, under guidance, such that he/she maintains a healthy lifestyle and the ability to function and work	conducts himself/herself independently such that he/she maintains healthy life styles and the ability to function and to work	knows how to independently develop different ways of maintaining and promoting a healthy lifestyle and the ability to function and to work
Planning and maintaining of a safe and healthy work environment	takes the foremost safety viewpoints and health factors into account in the planning of his/her own work and maintains the safety and ergonomics of the work environment in familiar situations	takes the safety viewpoints and health factors into account in the planning of his/her own work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into account independently in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
Adherence to the foremost legislation and instructions related to occupational health and work safety in forestry	adheres to given instructions and does not cause immediate hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations
	uses safely protective equipment, tools, and work methods in compliance with the instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired
	knows how to make use of technical safety systems and, under guidance, how to take them into account in his/her work	independently knows how to take into account technical safety systems in his/her work	independently knows how to take into account technical safety systems in his/her work
	takes into account in his/her work the associated necessary obligations related to work safety and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry
Vocational ethics	adheres to agreed working hours and negotiates any deviations in them	functions in accordance with the generally agreed action models	functions in accordance with the agreed action models
Vocational ethics in the realisation of sustainable development	accepts the realisation of the principles of socially, economically, and ecologically sustainable development in the field of forestry	assumes a positive attitude to the realisation of the principles of socially, economically, and ecologically sustainable development in the field of forestry	promotes the realisation of the principles of socially, economically, and ecologically sustainable development in the field of forestry

Interaction and cooperation	discusses, under guidance, his/her work	discusses proactively his/her work	discusses his/her work in an easy-going manner and is in possession of good listening skills
Learning and problem solving	solves frequently repeated problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
		avoids the reoccurrence of problems by changing his/her way of doing things	
	assesses his/her own work under guidance in accordance with the given criteria	assesses his/her own work under guidance in accordance with the given criteria	
applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome.	generally applies basic knowledge in his/her work with a qualitative and successful outcome.	applies basic knowledge in his/her work with a qualitative and successful outcome.	

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and carrying out wood harvesting work on a thinning site. In addition, he/she will measure the outcome of his/her work and calculate a price for his/her work. The student or candidate will also carry out silvicultural work. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: planning of the work site, treatment of thinning stands, preparing of timber assortments, pricing, and silvicultural recommendations
- ◆ mastering the work method, equipment and material: safe and ergonomic methods of work and skills
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, professional ethics, and interaction and cooperation.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.2 Forest nature services

Vocational skills requirements

The student or candidate knows how

- ◆ to service and repair the structures needed in providing forest tourism services
- ◆ to use and service the devices and tools needed in the field
- ◆ to use and service all-terrain vehicles in the field
- ◆ to guide tourists in the safe use of all-terrain vehicles
- ◆ to work in a forestry service enterprise as an entrepreneur and employee
- ◆ to cost-calculate his/her forest-related work
- ◆ to serve customers at forest sites of interest
- ◆ to serve as an assistant in various forest-tourism and programme-provider situations
- ◆ to identify the various hazards related to forestry work and the forest as a work environment
- ◆ to anticipate and to protect oneself from the various hazards related to forestry work and the forest as a work environment
- ◆ to utilise the health-promoting physical exercise necessary in the field of forestry
- ◆ to adhere to the legislation and instructions related to occupational health and safety in the field of forestry
- ◆ to take into account the needs and requirements of customers, users, and the environment
- ◆ to properly dispose of the waste created
- ◆ to justify and to analyse the measures he/she has carried out on the work site and the work methods used by him/her
- ◆ to function in an easy-going manner when in interaction with people.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Management of the habitats of game animals	manages, under guidance, the habitats of various game animals and carries out wildlife-management actions favouring various animal species	manages, almost independently, the habitats of various game animals and carries out wildlife-management actions favouring various animal species	manages, independently and promptly, the habitats of various game animals and carries out wildlife-management actions favouring various animal species
Providing guide services and forest-nature services for tourists Services related to collectible natural products Nature guide -services Hunting services Fishing services Adventure services Experience services Other programme services	serves as an assistant in various tourism and programme-service situations	guides tourists in various tourism and programme-service situations	guides tourists responsibly and fluently in different tourism and programme-service situations
	serves as an assistant in the production of nature services	functions nearly independently in providing nature services	functions responsibly and in a customer-centred manner in providing nature services
Languages Active citizenship and different cultures	engages in discussions tolerably well using one foreign language	guides customers using one foreign language	guides customers fluently using one foreign language and also masters the special vocabulary of the field
Construction of outdoor tourism structures	services and repairs tourism structures under guidance	services, repairs, and constructs tourism structures almost independently	services, repairs, and constructs tourism structures independently and with proficiency
Pricing of forest nature services and customer service integrated with one another for the production of services	applies, in part, the grounds for profitable entrepreneurship in his/her work and calculates, under guidance, the expenses and revenues	applies, for the most part, the grounds for profitable entrepreneurship in his/her work and calculates, almost independently, the expenses and revenues	independently applies the grounds for profitable entrepreneurship in his/her work and calculates independently the expenses and revenues

Initiative and entrepreneurship Application of mathematics	prices various types of work under guidance	prices various types of work almost independently	prices various types of work independently
	comprehends, in part, the fundamentals of profitable entrepreneurship and calculates, under guidance, expenses and yields	comprehends, for the most part, the fundamentals of profitable entrepreneurship and calculates the expenses and yields almost independently	comprehends thoroughly the fundamentals of profitable entrepreneurship and calculates the expenses and yields independently
	takes the customer's needs partly into account in his/her work	takes the customer's needs, for the most part, into account in his/her work	takes the customer's needs into account in his/her work, both enterprise-specifically and customer-specifically
		provides information on and markets services in an acceptable manner	provides information on and markets services in a situation-specific manner
Taking sustainable development into account Sustainable development	takes sustainable development into account, under guidance, in the planning and realisation of forest nature services, and in his/her choices of accessories, tools, and materials	takes sustainable development into account, almost independently, in the planning and realisation of forest nature services, and in his/her choices of accessories, tools, and materials	takes sustainable development into account in the planning and realisation of forest nature services independently, and in his/her choices of accessories, tools, and materials
Meticulousness and adherence to instructions	carries out frequently repeated tasks and adheres to given instructions, mainly with a sense of being motivated	plans and carries out tasks carefully and adheres to given instructions demonstrating self-initiative and, for the most part, diligence and a sense of being motivated	plans and carries out tasks carefully and with proficiency, and adheres to given instructions demonstrating self-initiative and diligence, with a sense of being motivated and appreciative of his/her work
Self-assessment	assesses, in part, his/her work performance and his/her development	assesses his/her work performance and development in an acceptable way	assesses his/her work performance and his/her development critically and realistically
Decision-making and reporting on the work done	makes decisions and proceeds logically when carrying out frequently repeated tasks	makes mostly correct decisions and proceeds logically in the carrying out of his/her tasks	makes decisions promptly and correctly, and proceeds logically in the carrying out of his/her tasks
Communication and media know-how	reports in brief on the results of his/her work.	reports in depth and fluently on the results of his/her work.	reports and analyses in depth and fluently on the results of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Maintenance, repairing, use, and user guidance related to machines, devices, and tools	uses and services at least one all-terrain vehicle, device or tool, and instructs tourists in how to use it	uses and services all-terrain vehicles, devices or tools, almost independently, and instructs tourists how to use them	uses, services, and repairs all-terrain vehicles, devices or tools, independently and promptly, and instructs tourists in an easy-going manner how to use them
Moving about outdoors	hikes, moves and guides a group in easy terrain safely, identifying the foremost hazardous elements, and uses appropriate equipment and tools	hikes, moves and guides groups in terrain throughout the different seasons of the year, almost independently, and completes these tasks safely, identifying hazardous elements, and uses appropriate equipment and tools	hikes, moves and guides groups in terrain throughout the different seasons of the year, independently, efficiently, and safely, identifying hazardous elements, and uses appropriate equipment and tools
Technology and information technology competence	uses various presentation methods and audio-visual tools to a small extent when reporting.	uses a variety of presentation methods and audio-visual tools when reporting.	uses different presentation methods and audio-visual tools in a variety of ways when reporting.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Pricing of forest nature services and customer service integrated with the production of services	knows his/her field of work so well that he/she is partly able to utilise the opportunities open in the field as an employee	knows his/her field of work so thoroughly that he/she is able, for the most part, to utilise the opportunities open in the field as an employee and as an entrepreneur	knows his/her field of work so thoroughly that he/she is able to efficiently utilise the opportunities open in the field as an employee and as an entrepreneur
	is partly aware of the employment and social security regulation of forest-related tourism and programme services, and adheres to the central contents of the collective labour agreement in his/her work	is aware, for the most part, of the employment and social security regulations of forest-related tourism and programme services, and adheres to the central contents of the collective labour agreement in his/her work	is aware of the employment and social security regulations of forest-related tourism and programme services, and adheres to the contents of the collective labour agreement in his/her work

	knows, in part, the opportunities available through business networking in the field	knows, for the most part, the opportunities available through business networking in the field and utilises them in his/her work	knows the opportunities available through business networking in the field and utilises them in his/her work
	acquires some of the information necessary in reporting the results of his/her work.	acquires, in different ways, the information necessary in reporting the results of his/her work.	acquires, in different ways, the information necessary in reporting the results of his/her work, and knows how to apply it well in practice.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety and the ability to function	The student or candidate		
	has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
		conducts himself/herself independently so that he/she maintains a healthy lifestyle and the ability to function and work	knows how to independently develop different ways of maintaining and promoting a healthy lifestyle and the ability to function and work
	takes the foremost safety viewpoints and health factors into account in the planning of his/her own work and maintains the safety and ergonomics of the work environment in familiar situations	takes, for the most part, safety viewpoints and health factors into account in the planning of his/her work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into account independently in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations		

	uses safely protective equipment, tools, and work methods in compliance with instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	ensures the safety of tools and materials before they are put into use, and withdraws faulty tools to be repaired
	knows how to utilise technical security systems and takes them, under guidance, into account in his/her work	independently knows how to take into account technical safety systems in his/her work	
	takes into account in his/her work the associated necessary obligations related to work safety and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry
Vocational ethics	adheres to agreed working hours and negotiates any deviations in them	functions in accordance with the generally agreed action models	functions in accordance with the agreed action models
	accepts the implementation of the principles of sustainable development in his/her field	assumes a positive attitude to the implementation of the principles of sustainable development in his/her field	promotes the implementation of the principles of sustainable development in his/her field and acquires some of the information needed in the reporting of the results of his/her work
Interaction and cooperation	discusses his/her work under guidance	proactively discusses his/her work	discusses his/her work in a natural manner and is in possession of good listening skills
Learning and problem solving	solves frequently repeated problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
		avoids the reoccurrence of problems by changing his/her way of doing things	
	assesses his/her own work under guidance, in accordance with the given criteria	assesses his/her own work under guidance in accordance with the given criteria	
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome.	applies basic knowledge in his/her work with a qualitative and successful outcome.	applies basic knowledge in his/her work with a qualitative and successful outcome.

Ways of demonstrating vocational skills

The student or candidate plans, prices, executes, and guides the delivery of the forest nature service. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: competence related to forest nature services, pricing, sustainable development, and meticulousness and adherence to instructions
- ◆ mastering the work method, equipment and material: servicing, repair, operation, and user guidance, and moving about in nature
- ◆ key competences for lifelong learning: competence in work safety and ergonomics, and vocational ethics

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.3 Collection and utilisation of forest data

Vocational skills requirements

The student or candidate knows how

- ◆ to determine and measure the foremost parameters related to the basic data of a compartment in a forest management plan
- ◆ to collect data for a forest management plan
- ◆ to assist in forest management planning
- ◆ to update the compartment data of a forest management plan
- ◆ to use the most common data acquisition and saving methods
- ◆ to use measuring equipment and positioning tools
- ◆ to participate in a forest management planning process.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Determining the basic data of a compartment	determines, under guidance, and measures the foremost parameters related to the basic data of a compartment included in a forest management plan	determines and measures, almost independently, the foremost parameters related to the basic data of a compartment included in a forest management plan	determines and measures, independently and correctly, the foremost parameters related to the basic data of a compartment included in a forest management plan
Determining of treatment needs of a compartment	determines, under guidance, the foremost treatment needs of a compartment	determines, almost independently, the foremost treatment needs of a compartment	determines independently the treatment needs of a compartment
Updating of compartment data	updates, under guidance, compartment data	updates, almost independently, the compartment data of sites which he/she has treated	updates, independently and correctly, the compartment data of sites which he/she has treated
Assessment of own work	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Stand measurements	measures, under guidance, the foremost parameters needed when collecting planning data	measures the parameters for planning independently	measures the parameters for planning independently and promptly
Use of measuring and positioning tools Utilisation of technology and information technology	uses, under guidance, measuring and positioning tools	uses measuring and positioning tools almost independently	uses measuring and positioning tools independently and correctly
Using data acquisition and saving methods	uses, under guidance, the most common data acquisition and saving methods.	uses, almost independently after an induction period, the foremost data acquisition and saving methods used by the employer or the customer in planning.	uses, independently and correctly after an induction, the data acquisition and saving methods used by the employer or the customer in planning.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Forest management planning	knows basically the principles of forest management planning	knows the principles of forest management planning	knows well the principles of forest management planning
Use of forest management plans and maps	knows how to use forest management plans and maps under guidance.	knows how to use forest management plan data and maps.	knows how to use forest management plan data and maps time-efficiently.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and the ability to function	has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	takes into account health and safety factors in the planning of his/her own work and maintains the safety and ergonomics of the work environment in familiar situations	conducts himself/herself independently so that he/she maintains a healthy lifestyle and the ability to function and work	takes steps independently to develop a healthy lifestyle and maintains and promotes his/her ability to function and work
	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	takes the safety viewpoints and health factors into account in the planning of his/her own work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into consideration independently in the planning of his/her own work and knows how to apply what he/she has learned also in unexpected situations
	uses safely protective equipment, tools, and work methods in compliance with instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired
	knows how to use technical safety systems in forestry and takes these into account, under guidance, in his/her work	independently takes technical safety systems in forestry into account, in his/her work	
	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry.	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry.	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in his/her field of forestry.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by determining the compartment data in the field, by measuring the stand parameters, and by determining the treatment needs of a compartment. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process in its entirety
- ◆ mastering the work method, equipment, and material: measuring of stand parameters and use of measuring and positioning tools
- ◆ underpinning knowledge: principles of forest management planning
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.4 Sales, servicing and repair of small machinery

Vocational skills requirements

The student or candidate knows how

- ◆ to work as an employee or entrepreneur in sales, maintenance, and repair tasks involving light machines with combustion engines
- ◆ to carry out troubleshooting focusing on light machines
- ◆ to replace or repair faulty parts
- ◆ to carry out regular maintenance on snowmobiles and ATVs
- ◆ to adhere to the legislation and instructions related to occupational health and safety in the field of forestry
- ◆ to dispose of waste in an proper manner
- ◆ to apply *Maastoliikennelaki* (All-Terrain Vehicles Act) to his/her work
- ◆ to price his/her labour input.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Sales work	functions, under guidance, in carrying out sales work	functions, almost independently, in carrying out sales work	works independently and in a customer-oriented manner when carrying out sales work
Customer-oriented performance Interaction and cooperation	takes, under guidance, into account the customer's needs	takes the customer's needs into account and functions accordingly	functions in a customer-oriented manner in all situations
Pricing of work Initiative and entrepreneurship	understands the fundamentals of pricing work	prices his/her work	prices his/her work independently and realistically
Assessment of own work	assesses his/her own work under guidance.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Troubleshooting	carries out troubleshooting when dealing with light machines when common faults occur and replaces or repairs, under guidance, parts as necessary	carries out troubleshooting when dealing with light machines when common faults occur and replaces or repairs parts as necessary	carries out troubleshooting when dealing with light machines when common faults occur and replaces or repairs parts as necessary and does so independently and promptly
Servicing	carries out regular maintenance on snowmobiles and ATVs under guidance.	carries out regular maintenance on snowmobiles and ATVs.	carries out regular maintenance on snowmobiles, ATVs and other such light machines independently and with proficiency.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Knowledge of Maastoliikennelaki (All-Terrain Vehicles Act)	knows the core parts of Maastoliikennelaki (All-Terrain Vehicles Act)	knows Maastoliikennelaki (All-Terrain Vehicles Act)	knows Maastoliikennelaki (All-Terrain Vehicles Act) thoroughly
Technical features of light machines	knows the basic engine features of 2 and 4-stroke engines and knows the fundamentals technical features of some other light machines	knows the engine features of 2 and 4-stroke engines and knows the fundamentals technical features of the more important light machines	knows in depth the engine features of 2 and 4-stroke engines and knows the fundamentals technical features of various light machines
Familiarity with the operating environment of a light-machine enterprise	lists the main aspects of the operating environment of an entrepreneur running a light-machine business.	lists and explains, for the most part, the main aspects of the operating environment of an entrepreneur running a light-machine business.	lists and explains, thoroughly, the aspects of the operating environment of an entrepreneur running a light-machine business.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or examinee		
Health, safety, and ability to function	is familiar, for the most part, with the safety devices of light machines and their working principles.	is familiar with the safety devices of light machines and their working principles.	is thoroughly familiar with the safety devices of light machines and their working principles.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in customer service related to the sales of light machines or by servicing and repairing light machines. Candidate does both of these. As regards servicing and repairs, the student or candidate prices his/her work in accordance with the vocational skills requirements.

A skills demonstration is to comprise at least

- ♦ mastering the work process: customer-oriented performance and sales work (when displaying sales skills)
- ♦ mastering the work method, equipment and material: troubleshooting and servicing, in regard to servicing and repair skills demonstration
- ♦ key competences for lifelong learning: competence related to work safety and ergonomics.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.5 Operating forwarders

Vocational skills requirements

The student or candidate knows how

- ◆ to function when carrying out tasks as an employee or entrepreneur in the extraction of timber
- ◆ to plan and carry out the extraction of timber using a forwarder or an agricultural tractor
- ◆ to carry out minor regular maintenance and simple repairs on the work site
- ◆ to dispose properly of waste produced at the work site
- ◆ to draw up an extraction plan for the work site
- ◆ to form various storage formations for timber assortments suitable for access by long-distance transportation
- ◆ to calculate the rates for the extraction of timber
- ◆ to estimate the amounts of timber to be harvested
- ◆ to transmit harvesting data using the data communications systems of harvesting machinery or by using some other means in accordance with work site instructions
- ◆ to adhere to the legislation and instructions related to occupational health and safety in the field of forestry.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning and implementation of short-distance transportation	draws up, under guidance, an extraction plan for the work site, extracts timber as per a plan in easy forest terrain	draws up an extraction plan independently for the work site, extracts timber as per a plan in normal forest terrain	draws up an extraction plan independently for the work site, extracts timber as per a plan, and also in difficult forest terrain
Servicing and repair of forest machinery	carries out, under guidance, minor regular maintenance of forest machinery	carries out, almost independently, minor regular maintenance of forest machinery and simple repairs	carries out minor regular maintenance of forest machinery and simple repairs independently
Dimensional and quality requirements of timber Application of mathematics and natural sciences	takes dimensional and quality requirements of timber assortments into account, under guidance, in his/her work	takes the most common dimensional and quality requirements of timber assortments into account, almost independently, in his/her work	takes the most common dimensional and quality requirements of timber assortments into account independently in his/her work
Planning and implementation of storage formations	executes, under guidance, storage formations of various timber assortments suitable for access by long-distance transportation.	executes storage formations of various timber assortments suitable, for the most part, for access by long-distance transportation. Storage formations may need slight resorting.	executes storage formations of various timber assortments suitable for access by long-distance transportation independently. Storage formations do not need resorting.
Pricing of work Initiative and entrepreneurship	calculates, under guidance, profitable rates for the extraction of timber	calculates, almost independently, profitable rates for the extraction of timber	calculates, independently and efficiently, profitable rates for the extraction of timber
Use of data transmissions systems and estimation of amounts of timber Utilisation of technology and information technology	receives, under guidance, work site instructions, estimates the amounts of timber and transmits the data using a forest machine's data communications systems or in some other form in compliance with the work site instructions	receives, almost independently, work site instructions, estimates the amounts of timber and transmits the data using a forest machine's data communications systems or in some other form in compliance with the work site instructions	receives, independently and faultlessly, work site instructions, estimates the amounts of timber and transmits the data using a forest machine's data communications systems or in some other form in compliance with the work site instructions
Protection of the environment	disposes, under guidance, of maintenance waste in accordance with instructions	disposes, almost independently, of maintenance waste in accordance with instructions	disposes independently of maintenance waste in accordance with instructions

Sustainable development	prevents the occurrence of anti-environmental hazards	prevents the occurrence of anti-environmental hazards and assumes a positive attitude with regard to environmental protection	prevents the occurrence of anti-environmental hazards and assumes an exemplary positive attitude with regard to environmental protection
Meticulousness and adherence to instructions	maintains, under guidance, the extraction machine and adheres to given instructions	meticulously maintains the extraction machine and adheres to given instructions	meticulously maintains the extraction machine in a quality fashion and adheres to given instructions
Troubleshooting	pinpoints, under guidance, faults in the running of a forest machine and determines the repair needs	pinpoints, almost independently, the most common faults in the running of a forest machine and determines the repair needs	proceeds systematically in troubleshooting with regard to the forest machine, pinpoints faults in the running of a forest machine independently and determines the repair needs
Self-initiative and diligence	demonstrates self-initiative and is largely motivated	demonstrates self-initiative, and is largely diligent and motivated	demonstrates self-initiative, and is diligent and motivated, and is appreciative of his/her work
Self-assessment	assesses his/her work performance in a partly acceptable way	assesses his/her work performance and development in an acceptable way	assesses his/her work performance and development in a critical and correct way
Decision making	makes partly correct decisions and progresses in his/her tasks.	makes mainly correct decisions and progresses logically in his/her tasks.	makes correct and speedy decisions and progresses logically in his/her tasks.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Extraction of timber	masters, under guidance, the methods of work involved in using the extraction vehicle in question and takes into account the requirements set on the quality of the harvesting	masters, almost independently, the methods of work involved in using the extraction vehicle in question and takes into account the requirements set on the quality of the harvesting	independently masters the methods of work involved in using the extraction vehicle in question and takes into account the requirements set on the quality of the harvesting
Choice and use of fuels and lubricants and of tools and spare parts, and accessories	chooses, under guidance, the spare parts, accessories, materials and tools needed in maintenance, and uses the tools in an acceptable way	chooses, almost independently, the spare parts, accessories, materials and tools needed in maintenance, and uses the tools correctly	chooses independently the spare parts, accessories, materials and tools needed in maintenance, and uses the tools faultlessly and correctly

Adjustments to forest machine settings Utilisation of technology and information technology	adjusts, under guidance, the work environment settings and the settings of a forest machine appropriate to his/her needs.	adjusts, almost independently, the work environment settings and the settings of a forest machine appropriate to his/her needs.	adjusts independently the work environment settings and the settings of a forest machine appropriate to his/her needs.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Familiarity with forest machine structure	is partly familiar with a forest machine's power transmission and engine performance, and the fundamentals of the hydraulics and electrical systems	is largely familiar with a forest machine's power transmission and engine performance, and the fundamentals of the hydraulics and electrical systems	is quite familiar with a forest machine's power transmission and engine performance, and the fundamentals of the hydraulics and electrical systems
Utilisation of hydraulics and electrical diagrams	knows, under guidance, how to interpret the basic markings of hydraulic and electrical diagrams in troubleshooting the performance of a forest machine.	knows, and makes largely correct use of the basic markings of hydraulics and electrical diagrams' basic markings in troubleshooting the performance of a forest machine.	knows, correctly interprets and faultlessly uses the basic markings of hydraulic and electrical diagrams in troubleshooting the performance of a forest machine.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and the ability to function	does his/her work, under guidance, in an ergonomically correct manner, and adheres in so doing to work safety instructions and regulations	does his/her work in an ergonomically correct manner, and adheres in so doing to work safety instructions and regulations	does his/her work in an ergonomically correct manner, and adheres in so doing to work safety instructions and regulations
	takes into account especially the hazardous elements of the work site and the work in question, and reports on these as necessary	takes into account especially the hazardous elements of the work site and the work in question, and reports on these as necessary	takes into account especially the hazardous elements of the work site and the work in question, and reports on these as necessary
Interaction and cooperation	discusses his/her work under guidance.	discusses his/her work.	discusses his/her work, and in so doing demonstrates a self-initiative and easy-going manner and is in possession of good listening skills.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and implementing extraction of timber on a forest work site using a forwarder or an agricultural tractor. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process, excluding regular maintenance and repairs, and troubleshooting
- ◆ mastering the work method, equipment and material: extraction of timber
- ◆ underpinning knowledge: forest machine structure
- ◆ key competences for lifelong learning: work safety and health know-how.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.6 Further processing of wood

Vocational skills requirements

The student or candidate knows how

- ◆ to engage in the manufacturing of products by further processing in accordance with mechanical drawings or plans
- ◆ to further process wood products while using the most common machinery and plant equipment in so doing
- ◆ to price his/her own work and to assist in marketing
- ◆ to work within tasks involving the further processing of wood as an employee or an entrepreneur
- ◆ to adhere to the legislation and guidelines related to occupational health and work safety in forestry and the woodworking industry.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Use of mechanical drawings and plans	constructs, under guidance, products involving further processing in accordance with mechanical drawings and plans	uses, almost independently, mechanical drawings and plans showing wood products for the dimensioning of raw material and computing of material amounts, and constructs further-processed products	independently uses mechanical drawings and plans showing wood products for the dimensioning of raw material and computing of material amounts, and constructs further-processed products
Use of supplementary material obtainable from nature	uses, under guidance, supplementary material obtainable from nature	uses, almost independently and thoroughly, supplementary material obtainable from nature and knows the impact of its use on the product to be sold	uses, independently and faultlessly, supplementary material obtainable from nature and knows the impact of its use on the product to be sold
Further processing of wood products	carries out, under guidance, further processing of wood products	carries out, almost independently, further processing of wood products in accordance with his/her personal choices and local entrepreneurship possibilities	independently carries out further processing of wood products in accordance with his/her personal choices and local entrepreneurship possibilities
Pricing of own work and marketing Initiative and entrepreneurship	prices his/her own work under guidance	prices products almost independently	prices products independently and realistically
Self-assessment	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Use of tools and processing further-processed product	processes, under guidance, further-processed products using the foremost tools	processes, almost independently, further-processed products using various tools and provides grounds for his/her decisions	processes independently and with proficiency further-processed products using various tools and provides grounds for his/her decisions
Adherence to safe and ergonomic methods of work	works, under guidance, ergonomically and safely while using correct methods of work.	works, almost independently, ergonomically and safely while using correct methods of work.	works independently ergonomically and safely while using correct methods of work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Processing of mechanically hewn logs and fabrication of prefabricated structures Utilisation of technology and information technology	knows, in part, the processing technique involved in mechanically manufactured further-processed products and fabricates such structures under guidance.	knows, for the most part, the processing technique involved in mechanically manufactured further-processed products and fabricates such structures almost independently.	knows the processing technique involved in mechanically manufactured further-processed products and fabricates such structures independently and with proficiency.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and the ability to function	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	adheres to instructions applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	uses safely protective equipment, tools, and work methods in compliance with instructions.	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced.	knows how to assess the suitability of protective equipment, tools and work methods for the work in question.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by designing and manufacturing a further-processed product. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process, excluding pricing and marketing
- ◆ mastering the work method, equipment and material in its entirety
- ◆ underpinning knowledge: processing technique applied in the processing of mechanically hewn logs
- ◆ key competences for lifelong learning: work safety and health know-how

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.7 Harvesting forest-based energy materials

Vocational skills requirements

The student or candidate knows how

- ◆ to choose the appropriate forest-based energy source
- ◆ to choose the harvesting method appropriate to the situation
- ◆ to deliver the forest-based energy product to customers
- ◆ to price the product
- ◆ to produce, handle, and store various energy types safely and ergonomically
- ◆ to service, under guidance, the equipment used by energy-provider entrepreneurs ergonomically and safely
- ◆ to dispose of the service waste produced on forest-based energy-harvesting work sites
- ◆ to harvest, handle, and store forest-based energy as an employee or as an entrepreneur
- ◆ to adhere to the legislation and instructions related to occupational health and safety in the field of forestry.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Procurement and processing of raw material	chooses, under guidance, the correct forest-based energy sites, and chooses, under guidance, the harvesting method appropriate to the situation	chooses forest-based energy sites and chooses the harvesting method appropriate to the situation	chooses forest-based energy sites, and chooses the harvesting method appropriate to the situation independently and promptly

Pricing of products, marketing, and distribution to customers	delivers, under guidance, products to the customers. He/she understands the fundamentals of product pricing	prices, markets, and delivers products, almost independently, to the customers. He/she understands the advantages of networking in the marketing and distribution of various energy types	prices, markets, and delivers products independently to the customers. He/she masters the benefits of networking in the marketing and distribution of various energy types
Assessment of own work	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Production, processing, and storage of different energy types	produces, handles, and stores, under guidance, different energy types ergonomically and safely	produces, handles, and stores, almost independently, different energy types ergonomically and safely. He/she understands the significance of the degree of dryness from the point of view of keeping in storage and fire safety during storage	knows the quality requirements applied to different energy types and independently produces, handles, and stores different energy types ergonomically and safely. He/she independently takes into account the degree of dryness regarding fire safety
Work-safe and ergonomic methods of work	services, under guidance, the most common types of equipment used in energy-supply entrepreneurship and does this ergonomically and safely.	services, almost independently, the equipment used in energy-supply entrepreneurship and does this ergonomically and safely.	services independently and systematically the equipment used in energy-supply entrepreneurship and does this ergonomically and safely.

TARGET OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Procurement, availability, and processing of raw material	understands the main aspects of the requirements set on the forest-energy sites and selects, under guidance, the appropriate harvesting method.	knows the requirements set on the forest-based energy sites and selects the appropriate harvesting method.	knows the requirements set on the forest-based energy sites and selects independently the appropriate harvesting method.

TARGET OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety, and ability to function	The student or examinee		
	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	adheres to instructions applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	uses protective equipment, tools, and work methods in compliance with instructions safely.	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced.	knows how to assess the suitability of protective equipment, tools and work methods for the work in question.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and carrying out the procurement of forest-based energy. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: procurement, availability, and processing of raw material
- ◆ mastering the work methods, equipment and material in its entirety
- ◆ underpinning knowledge: procurement, availability, and processing of raw material
- ◆ key competences for lifelong learning: competence related to safety and health

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.8 Felling and arboricultural services related to special trees

Vocational skills requirements

The student or candidate knows how

- ◆ to fell special trees as an employee or as an entrepreneur
- ◆ to market felling and arboricultural services related to special trees
- ◆ to use the foremost tools needed in felling work ergonomically and safely
- ◆ to assist in the charting of the condition of trees while using the associated measuring devices
- ◆ to carry out the more common tasks following felling work, chipping of branches, and grinding away stumps
- ◆ to climb a tree ergonomically and safely in easy cases using climbing equipment
- ◆ to operate a hoist platform ergonomically and safely
- ◆ to apply arboricultural treatments on special trees and stands of special trees
- ◆ to adhere to the legislation and instructions related to occupational health and safety in the field of forestry.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Pricing of work Initiative and entrepreneurship	prices, under guidance, his/her work at the work site	prices, almost independently, his/her work at the work site	prices, independently and realistically, his/her work at the work site
Marketing of felling and arboricultural services related to special trees	assists, under guidance, in the marketing of felling and arboricultural services related to special trees	markets, almost independently, the felling and arboricultural services related to special trees	markets independently the felling and arboricultural services related to special trees

Networking	lists the main principles of networking	lists the opportunities offered by networking and makes use of other enterprises in the field in connection with the most common networking targets	determines the opportunities offered by networking and independently makes use of other enterprises in the field
Active citizenship and different cultures	adopts a positive attitude to international networking within his/her workplace community	adopts a positive attitude within his/her workplace community and participates in international networking	adopts a positive attitude within his/her workplace community and participates actively in international networking
Attending to work safety	attends to work safety at work sites		
Customer-oriented performance	takes customer's needs into account under guidance.	functions mainly in accordance with the customers' needs when providing felling and arboricultural services.	functions in a professional customer-oriented manner when providing felling and arboricultural services.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Felling of special trees Use of auxiliary equipment when felling trees	fells special trees under guidance and uses the foremost auxiliary equipment needed in felling work and does so ergonomically and safely	fells special trees almost independently and uses the foremost auxiliary equipment needed in felling work and does so ergonomically and safely	fells special trees independently and seamlessly and uses the auxiliary equipment needed in felling work and does so ergonomically and safely
Application of climbing technique and hoist platform	climbs trees under guidance using climbing equipment in easy cases and operates the hoist platform under guidance	climbs trees almost independently using climbing equipment and operates the hoist platform	climbs trees with ease and independently using climbing equipment and operates the hoist platform efficiently
Working when up a tree	works, under guidance, when up a tree and when on the hoist platform using a handsaw and a chainsaw	works, almost independently, when up a tree and when on the hoist platform using a handsaw and a chainsaw	works, independently and faultlessly, when up a tree and when on the hoist platform using a handsaw and a chainsaw
Providing rescue service up a tree	knows, under guidance, how to rescue an incapacitated person from a tree and safely lower that person onto the ground	knows, almost independently, how to rescue an incapacitated person from a tree and safely lower that person onto the ground	independently knows how to rescue an incapacitated person from a tree and safely lower that person onto the ground

Follow-up work after felling	carries out, under guidance, the most common types of follow-up work after felling, chipping of branches, and grinding away of stumps	carries out, almost independently, the various types of follow-up work after felling, chipping of branches, and grinding away of stumps	carries out independently and faultlessly all types of follow-up work after felling, chipping of branches, and grinding away of stumps
Charting of the condition of trees	assists, under guidance, the charting of the condition of trees	carries out, almost independently, the charting of the condition of trees	carries out, independently and promptly, the charting of the condition of trees
Arboricultural pruning and supporting of the tree crown	carries out, under guidance, the commonest arboricultural treatments.	carries out, almost independently, arboricultural treatments.	carries out, independently and promptly, arboricultural treatments.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Familiarity with the operating environment of an enterprise operating in the field of light machines	is familiar, for the most part, with the operating environment of an enterprise operating in the field of light machines.	is familiar with the operating environment of an enterprise operating in the field of light machines.	is very familiar with the operating environment of an enterprise operating in the field of light machines.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	takes safety aspects into account in all that he/she does	takes safety aspects into account independently in all that he/she does	takes safety aspects into account independently and thoroughly in all that he/she does
Adhering to correct work modes	applies correct work modes under guidance	applies correct work modes almost independently	applies correct work modes independently
Learning and problem solving	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and implementing the felling of a special tree. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ♦ mastering the work process: work planning on the site
- ♦ mastering the work method: equipment and material competence in felling of special trees and follow-up work
- ♦ underpinning knowledge: operating environment of enterprises in the field of light machines
- ♦ key competences for lifelong learning: competence related to work safety, health, and learning and problem solving.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.9 Nature tourism

Vocational skills requirements

The student or candidate knows how

- ♦ to plan, price, and implement guiding services or programme service packages for tourist groups within a sector of specialisation
- ♦ to function as a producer of programme services related to forest nature services as an employee or as an entrepreneur while using local ecotourism sites and programme service opportunities
- ♦ to serve foreign customers in one foreign language
- ♦ to assist in the productisation of local nature targets within his/her own sector of specialisation
- ♦ to identify the foremost locally invaluable landscape targets, nature targets, and culture targets, and opportunities for programme services, and (under guidance) to present these to customer groups within his/her sector of specialisation.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Making use of local nature targets and programme services opportunities in tourism	identifies the locally most invaluable landscape targets, nature targets, and cultural targets, and opportunities for programme services, and presents these, under guidance, to customer groups within his/her sector of specialisation	identifies local invaluable landscape targets, nature targets, and cultural targets, and opportunities for programme services, and presents them, almost independently, to customer groups, and makes use of them within ecotourism and in the production of programme services within his/her sector of specialisation	identifies local invaluable landscape targets, nature targets, and cultural targets, and opportunities for programme services, and presents them independently to customer groups, and makes use of them independently within ecotourism and in the production of programme services within his/her sector of specialisation
Languages Active citizenship and different cultures	serves foreign customers, under guidance, in one foreign language	serves foreign customers independently in one foreign language using basic vocabulary	serves foreign customers independently in one foreign language using specialist vocabulary
Productisation Initiative and entrepreneurship	assists, under guidance, in the productisation of local nature targets within his/her sector of specialisation	engages in productisation, development, and assessment of the simplest business ideas within his/her sector of specialisation, almost independently, and makes use of local strengths in doing so	engages independently in productisation, development, and assessment of the business ideas within his/her sector of specialisation, and makes use of local strengths in doing so
Pricing and marketing Initiative and entrepreneurship	prices and markets, under guidance, his/her own specialist competence	prices and markets, almost independently, his/her own specialist competence, also to foreign customers.	prices and markets independently his/her own specialist competence, also to foreign customers
Assessment of own work	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Production of programme services Communication and interaction	serves customers, under guidance, in providing programme services	serves customers, almost independently, in providing programme services	serves customers independently and in a customer-oriented manner in providing programme services

Sustainable development	works, under guidance, in accordance with the principles of sustainable development.	works, almost independently, in accordance with the principles of sustainable development.	works independently in accordance with the principles of sustainable development.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Familiarity with the operating environment of an enterprise in the field of ecotourism	is familiar, for the most part, with the operating environment of an enterprise operating in the field of ecotourism.	is familiar with the operating environment of an enterprise operating in the field of ecotourism.	is very familiar with the operating environment of an enterprise operating in the field of ecotourism.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	adheres to instructions applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	uses safely protective equipment, tools, and work methods in compliance with the instructions.	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced.	knows how to assess the suitability of protective equipment, tools and work methods for the work in question.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning, pricing, and compiling a guide's services package or programme services package for a tourist group within the sector of his/her specialisation. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: pricing
- ◆ mastering the work method, equipment and material: production of programme services
- ◆ underpinning knowledge: operating environment of an ecotourism enterprise
- ◆ key competences for lifelong learning: competence related to work safety and health and learning and problem solving.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.10 Hunting tourism

Vocational skills requirements

The student or candidate knows how

- ◆ to plan and to implement a hunting-tourism event with himself/herself involved as an employee
- ◆ in regard to planning of the hunting-tourism event, he/she knows how
 - to reserve the hunting area
 - to manage the environment in the hunting area
 - to reserve and attend to the equipment, tools, and food required by the event
 - to price his/her labour input
 - to anticipate the customers' safety risks
 - to construct the foremost game structures
 - to use and service the foremost machines and devices needed in the activity
- ◆ in regard to the implementing of the hunting-tourism event, he/she knows how
 - to advise and guide customers within the hunting area with regard to risk-free shooting and moving about during the hunt in compliance with Finnish hunting culture traditions
 - to prepare bagged game in the field
 - to attend to waste disposal in accordance with the principles of sustainable development
 - to work with both domestic and foreign customers taking part in the hunting event
 - to hunt in adherence to the legislation and guidelines related to hunting.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Organising of a hunting event Active citizenship and different cultures	knows in practice the main features of the foremost forms of hunting and functions, under guidance, with domestic customers in hunting events. Knows how to hunt	knows in practice the special features of the foremost forms of hunting and functions, almost independently, with domestic and foreign customers in hunting events. Knows how to hunt	knows in practice the features of the foremost forms of hunting so thoroughly that he/she is able to functions independently and with proficiency with domestic and foreign customers in hunting events. Knows how to hunt
Interaction and customer service Initiative and entrepreneurship Active citizenship and different cultures	functions, under guidance, with domestic customers in providing customer service	functions independently and with proficiency in the most important customer service situations with domestic customers and (under guidance) also with foreign customers	functions independently and with proficiency in customer service situations with domestic customers and foreign customers
Assessment of own work	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Construction of game structures and use and servicing of machines and devices	constructs, under guidance, the most important game structures and uses and services the most important machines and devices needed in this activity	constructs, almost independently, various game structures and uses and services the machines and devices needed in this activity	constructs various game structures independently, with proficiency and faultlessly and uses and services the machines and devices needed in this activity
Preparation of bagged game Vocational ethics	prepares, under guidance, game hygienically	prepares and enhances game hygienically to a fairly good standard	prepares and enhances game independently, hygienically, and to a high standard

Adherence to vocational ethics and work safety	functions ethically, ergonomically, safely, and in accordance with the principles of sustainable use.	functions in compliance with vocational ethics, ergonomics, safety, and in accordance with the principles of sustainable use.	functions independently in compliance with vocational ethics, ergonomics, safety, and in accordance with the principles of sustainable use.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Productisation, pricing, and marketing of hunting-tourism events	understands, for the main part, the principles of pricing hunting tourism, and assists in marketing under guidance	prices and markets the hunting-tourism services to domestic customers almost independently	independently productises, prices, and markets the various hunting-tourism services to both domestic and foreign customers
Familiarity with hunting culture	is familiar with the main features of Finnish hunting culture and assists, under guidance, foreign hunters.	is familiar with the special features of Finnish hunting culture and in his/her actions takes largely into account the arrangements necessitated by the different hunting cultures of foreign hunters.	is thoroughly familiar with the special features of Finnish hunting culture and in his/her actions takes into account, independently and with proficiency, the arrangements necessitated by the different hunting cultures of foreign hunters.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	independently develops the safety of his/her actions
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	adheres to instructions applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	safely uses protective equipment, tools, and work methods in compliance with instructions.	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced.	knows how to assess the suitability of protective equipment, tools and work methods for the work in question.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning, pricing, and implementing a hunting-tourism event in a typical hunting-tourism environment. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process in its entirety
- ◆ mastering the work method, equipment and material: ethical and safe work modes and preparation of the bagged game
- ◆ underpinning knowledge: productisation, pricing, and marketing of hunting-tourism events
- ◆ key competences for lifelong learning: health, safety and ability to function, learning and problem solving.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.11 Fishing tourism

Vocational skills requirements

The student or candidate knows how

- ◆ to plan and price fishing-tourism events
- ◆ to act as a guide in connection with a fishing-tourism event
- ◆ to work as an employee or an entrepreneur involved in a fishing-tourism event
- ◆ to use the most typical fishing tackle
- ◆ to service and repair fishing tackle during fishing
- ◆ to dispose of waste in the proper manner
- ◆ to fish using the most common local fishing methods.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
		The student or candidate	
Planning of fishing trips	plans, under guidance, appropriate fishing packages for customers	plans, almost independently, appropriate fishing packages for customers	plans, independently and faultlessly, appropriate fishing packages for customers
Guide's services and advisory services Interaction and cooperation	guides and advises customers under guidance	guides and advises customers almost independently	guides and advises customers independently and in a customer-oriented manner
Pricing and marketing	prices and markets under guidance	prices and markets products almost independently	prices and markets products independently and in a customer-oriented manner
Assessment of own work	assesses his/her own work under guidance.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
		The student or candidate	
Familiarity with fishing methods and the use and servicing of fishing tackle	fishes, under guidance, using the most common fishing methods	fishes, almost independently, using the most common local fishing methods	fishes independently using the most common local fishing methods
	uses, under guidance, the most typical fishing tackle and services the tackle during fishing	uses, almost independently, the most typical fishing tackle and services the tackle during fishing	uses the fishing tackle independently and correctly and services the fishing tackle during fishing
Reconditioning of tools	repairs the tools needed in handling fish under guidance	repairs the tools needed in handling fish almost independently	repairs the tools needed in handling fish independently and with proficiency
Preparation of fish for food outdoors	prepares fish for food, under guidance, in outdoor conditions	prepares fish for food, almost independently, in outdoor conditions	prepares fish for food, independently and faultlessly, in outdoor conditions
Preparation of the catch Vocational ethics	prepares, under guidance, the catch ethically, hygienically, and safely	prepares, almost independently, the catch ethically, hygienically, and safely	prepares, independently and faultlessly, the catch ethically, hygienically, and safely

Handling of the boat	handles the boat during fishing safely and observes the rules relevant to boating.	handles the boat during fishing safely and observes the rules relevant to boating.	handles the boat during fishing safely and efficiently and observes the rules relevant to boating.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Familiarity with the process of fish becoming spoiled	identifies, under guidance, fresh fish and is able, for the most part, to explain the process of fish becoming spoiled	identifies fresh fish and is able, for the most part, to explain the process of fish becoming spoiled	identifies fresh fish and is able to thoroughly explain the process of fish becoming spoiled
Working in accordance with fishing legislation and sustainable development	performs, under guidance, in the way required by legislation while providing fishing-tourism services.	knows, for the most part, the legislation related to fishing tourism and functions, almost independently, in accordance with the legislation and the principles of sustainable development while providing fishing-tourism services.	thoroughly knows the legislation related to fishing tourism and functions independently in accordance with the legislation and the principles of sustainable development while providing fishing-tourism services.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	independently develops the safety of his/her actions
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	adheres to instructions applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	uses safely protective equipment, tools, and work methods in compliance with instructions	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced	knows how to assess the suitability of protective equipment, tools and work methods for the work in question
	knows what to do in cases of boating accidents.	thoroughly knows what to do in cases of boating accidents.	knows in an excellent manner what to do in cases of boating accidents.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and pricing a fishing-tourism event for a customer group and by functioning as a guide in a typical fishing-tourism environment. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process in its entirety
- ◆ mastering the work method, equipment and material: use and servicing of fishing tackle and preparation of the catch
- ◆ underpinning knowledge: process of fish becoming spoiled
- ◆ key competences for lifelong learning: competence in health, safety and ability to function and sustainable development.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.12 Silvicultural work

Vocational skills requirements

The student or candidate knows how

- ◆ to work on a forest work site carrying out silvicultural work tasks
- ◆ to plan and to carry out improvement motor-manual felling in a young thinning stand
- ◆ to service and maintain his/her tools
- ◆ to carry out the various tasks involved in forest regeneration, tending of young stands, and thinning stands as an employee or as an entrepreneur
- ◆ to take into account the ecologically important habitats as stated in the regulations and the environmental and silvicultural recommendation applying to commercial forests when carrying out silvicultural work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Forest regeneration work	carries out, under guidance, forest regeneration work	carries out, almost independently, forest regeneration work	carries out, independently and promptly, forest regeneration work
Tending of young stands	carries out, under guidance, the tending of young stands	plans and carries out, almost independently, the tending of young stands	plans and carries out, independently and promptly, the tending of young stands
	implements, under guidance, the treatment of thinning stands	determines, plans, and implements, almost independently, the treatment of thinning stands	determines, plans, and implements the treatment of thinning stands independently and efficiently
Pricing and customer service of forestry work and services	prices, under guidance, various types of work	prices, almost independently, the different types of work	prices the different types of work independently
Initiative and entrepreneurship	takes into account, in part, the customer's needs and wishes in his/her work, and advises and guides customers	takes into account, for the most part, the customer's needs and wishes in his/her work, and advises and guides customers in an acceptable manner	takes into account the customer's needs and wishes well in his/her work, and advises and guides customers in an easy-going and proactive manner
Adherence to silvicultural recommendations and sustainable development	takes into account the ecologically important habitats as stated in the regulations and nature and the silvicultural recommendations applying to commercial forests when carrying out silvicultural and harvesting work	takes into account, almost independently, the ecologically important habitats as stated in the regulations and nature and the silvicultural recommendations applying to commercial forests when carrying out silvicultural and harvesting work	takes into account, independently and thoroughly, the ecologically important habitats as stated in the regulations and nature and the silvicultural recommendations applying to commercial forests when carrying out silvicultural and harvesting work
Assessment of own work	assesses, under guidance, his/her own work.	assesses his/her own work in accordance with given criteria.	assesses his/her own work in accordance with quality criteria.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Management of work methods that are safe and ergonomic	works and uses forestry tools, under guidance, safely and paying due attention to hazardous elements and adhering to ergonomically-correct work methods; and services and reconditions tools and equipment in accordance with instructions.	works and uses forestry tools, almost independently and safely, and paying due attention to hazardous elements and adhering to ergonomically-correct work methods, and services and reconditions tools and equipment in accordance with instructions.	works and uses forestry tools, independently, efficiently and safely, paying due attention to hazardous elements and adhering to ergonomically-correct work methods; and services and reconditions tools and equipment in accordance with instructions.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Knowledge of the silvicultural recommendations	knows the main aspects of the central content of the silvicultural recommendations.	knows the central content of the silvicultural recommendations.	knows well the central content of the silvicultural recommendations.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions adheres to instructions	develops the safety of his/her actions independently
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	uses protective equipment, tools, and work methods safely in compliance with instructions.	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced.	knows how to assess the suitability of protective equipment, tools and work methods for the work in question.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by tending young stands or by carrying out improvement felling in young thinning stands. Moreover, student or candidate carries out forest regeneration work. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: ecologically important habitats and competence related to silviculture
- ◆ mastering the work method, equipment and material: safe and ergonomic work methods and skills
- ◆ underpinning knowledge: knowledge of the contents of the silvicultural recommendations
- ◆ key competences for lifelong learning: health, safety and ability to function and learning and problem solving.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.2.13 Business management

Vocational skills requirements

The student or candidate knows how

- ◆ to draw up a business development plan or the development plan of for his/her enterprise inclusive of a staff development plan for the enterprise
- ◆ to conduct himself/herself as the employer's representative in a negotiation situation at the workplace involving the staff
- ◆ to conduct himself/herself in the position of a supervisor or foreman of an enterprise providing forestry services or as an entrepreneur who has employees.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Choice of enterprise form	chooses, under guidance, the enterprise form appropriate for the business idea	chooses, almost independently, the enterprise form with grounds appropriate for the business idea	independently chooses the enterprise form with grounds appropriate for the business idea
Networking	makes use, under guidance, of networks with other actors	networks with other actors and provides grounds for the benefits of networking	networks with other actors and provides in-depth grounds for the benefits of networking
Productisation and development of a business idea	productises, under guidance, a business idea and develops, under guidance, the enterprise's products and services	productises, almost independently, a business idea and develops, under guidance, the enterprise's products and services in a customer-oriented manner	independently productises a business idea and develops the enterprise's products and services in a customer-oriented manner
Pricing of products and services Initiative and entrepreneurship	prices, under guidance, the products and services so that they produce a profit	prices, almost independently, the products and services so that they produce a profit	independently prices the products and services so that they produce a profit and comply with the market situation
Marketing of the enterprise	markets the enterprise under guidance	markets the enterprise almost independently	independently markets the enterprise in different ways
Taking into account changes in the operating environment Initiative and entrepreneurship	applies, under guidance, developments in the enterprise's field in the operation and development of the enterprise.	applies and estimates, almost independently, developments in the enterprise's field and, under guidance, makes use of the relevant information in the operation and development of the enterprise.	independently applies and estimates developments in the enterprise's field and makes use of the relevant information in the operation and development of the enterprise.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Staff management	manages, under guidance, the enterprise's staff	manages, under guidance, the enterprise's staff and functions as a supervisor	independently manages the enterprise's staff and functions fully as a supervisor
Interaction and cooperation			
Supervisor's skills and leadership skills	leads, under guidance, the business activity and the enterprise	leads, almost independently, the business activity and the enterprise in accordance with economic principles	independently leads the business activity and the enterprise in accordance with economic principles and in a developing manner

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Pricing of one's own work	knows, for the most part, the grounds for the pricing of his/her own work.	knows the grounds for the pricing of his/her own work.	knows the grounds for the pricing of his/her own work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
4. Key competences for lifelong learning	The student or candidate		
Health, safety and ability to function	assumes a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	independently develops the safety of his/her actions
	adheres to the safety instructions given regarding his/her work and does not cause hazardous situations	adheres to instructions applied within the workplace community and takes other members of the workplace community into account in the carrying out of his/her work	perceives and identifies hazards related to his/her work and reports on them
	safely uses protective equipment, tools, and work methods in compliance with instructions	ensures the safety of tools and materials, and withdraws faulty tools from use and takes them to be serviced	knows how to assess the suitability of protective equipment, tools and work methods for the work in question
Learning and problem solving	assesses his/her own work under guidance	assesses his/her own work in accordance with the given criteria	assesses his/her own work in accordance with quality requirements
Communication and media know-how	guides and advises customers under guidance	guides and advises customers	guides and advises customers

Interaction and cooperation	has the ability to interact and collaborate in negotiation situations.	has the ability to interact and collaborate flexibly in negotiation situations.	has the ability to interact and to adapt to different situations during the negotiation situation.
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Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by drawing up a business plan or a development plan for his/her own enterprise. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: choice of enterprise form, productisation of a business idea, and pricing of products and services
- ◆ mastering the work method, equipment and material: negotiation skills
- ◆ underpinning knowledge: fundamentals of pricing of one's own work
- ◆ key competences for lifelong learning: health, safety and ability to function and learning and problem solving.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.3 STUDY PROGRAMME OR SPECIALISATION IN FOREST MACHINE OPERATION

4.3.1 Lorry and forest machine maintenance

Vocational skills requirements

The student or candidate knows how

- ◆ to carry out daily topping-up and checks on forest machines, lorries, and excavators
- ◆ to carry out frequently repeated servicing and maintenance work on forest machines, lorries, and excavators
- ◆ to dispose of waste in the proper manner

- ♦ to pinpoint mechanical, electrical and/or hydraulic faults on forest machines, lorries or excavators, to determine the need for repairs, and where possible eliminate the fault
- ♦ to check and (where necessary) adjust pressure levels and/or electrical settings of functions, and to ensure that the function in question is in working order
- ♦ to manage the structures, properties, and equipping of forest machines, lorries, and excavators
- ♦ to manage the working principles and settings of the various systems built into forest machines, lorries, and excavators
- ♦ to adjust the functions of forest machines, lorries, and excavators to meet driver-specific requirements
- ♦ to read and interpret the servicing and repair manuals, including in one foreign language.

In addition to placing emphasis on his/her competence in one common basic competence, the student or candidate emphasises his/her mastery of the technology, servicing, and operating maintenance of a forwarder, harvester, log truck or excavator.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Inspection and servicing of machines and lorries	carries out daily inspections and maintenance, and carries out, under guidance, frequently repeated servicing in accordance with service and operator manuals	carries out daily inspections and maintenance, and carries out, almost independently, frequently repeated servicing in accordance with service and operator manuals	carries out daily inspections and maintenance, and independently carries out frequently repeated servicing in accordance with service and operator manuals
	keeps a lorry in the condition required by road traffic legislation.	keeps a lorry in the condition required by road traffic legislation.	keeps a lorry in the condition required by road traffic legislation.

Preparatory work for demanding repairs	prepares, under guidance, a machine or lorry for welding or for other demanding repair work in accordance with the manufacturer's requirements and fire safety guidelines	prepares, almost independently, a machine or lorry for welding or for other demanding repair work in accordance with the manufacturer's requirements and fire safety guidelines	independently prepares a machine or lorry for welding or for other demanding repair work in accordance with the manufacturer's requirements and fire safety guidelines
Inspection, servicing, and repair of a harvesting device:			
Loader Felling Head or other implement to be attached to a prime mover	carries out frequently repeated inspections of an implement independently, and, under guidance, servicing and normal repairs of the same	carries out, almost independently, the inspections, servicing, and normal repairs for an implement	carries out, independently and precisely, the inspections, servicing, and normal repairs for an implement
Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence Initiative and entrepreneurship	carries out routine jobs proactively and is mostly motivated	is proactive, mostly diligent and motivated	is proactive, diligent, motivated, and appreciative of his/her work
Self-assessment	assesses his/her work performance in a partly acceptable way	assesses his/her work performance and development in an acceptable way	assesses his/her work performance and development in different ways
Decision making	mostly makes correct decisions and proceeds logically in his/her work in frequently repeated situations	makes correct decisions and proceeds logically in his/her work	makes correct decisions promptly and correctly, and proceeds logically in his/her work
Presentation of work and reporting Communication and media know-how	presents and reports the results of his/her work in brief.	presents and reports the results of his/her work in different ways.	presents and reports the results of his/her work in a diverse and logical manner.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Use of tools and measuring equipment and maintenance accessories	uses and handles the normal electrical and pneumatic tools used in maintenance in an acceptable way	uses and handles the normal electrical and pneumatic tools used in maintenance in an acceptable way	uses and handles the normal electrical and pneumatic tools used in maintenance correctly
	uses, handles, and reads the necessary measuring equipment in an acceptable way	uses, handles, and reads the necessary measuring equipment correctly	uses, handles, and reads the necessary measuring equipment correctly and accurately

Troubleshooting	determines and repairs malfunctions under guidance. Uses, in part, the troubleshooting system, the operation manual, and circuit diagrams in his/her work	determines and repairs malfunctions almost independently. Uses the troubleshooting system, the operation manual, and circuit diagrams in his/her work	determines and repairs malfunctions independently, seamlessly, and logically. Uses the troubleshooting system, the operation manual, and circuit diagrams to the full in his/her work
Use of service, lubrication, and other substances	chooses, under guidance, the service lubrication and operating substances of various items, and identifies their markings	correctly chooses the service lubrication and operating substances of various items, and identifies their foremost markings	efficiently and correctly chooses the service lubrication and operating substances of various items, and identifies their foremost markings
Handling of oils and other servicing waste	separates the waste formed in connection with servicing and material to be recycled, and disposes of it by placing it in places reserved for it	separates the waste formed in connection with servicing and material to be recycled, and disposes of it by placing it in places reserved for it	separates the waste formed in connection with servicing and material to be recycled, and disposes of it by placing it in places reserved for it
Sustainable development	handles and, under guidance, transports fuels in accordance with regulations and instructions.	handles and, almost independently, transports fuels in accordance with regulations and instructions.	independently handles and transports fuels in accordance with regulations and instructions.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Understanding the significance of servicing measures Initiative and entrepreneurship	understands, in part, the significance of servicing measures for the working order of a machine	understands, for the most part, the significance of servicing measures for the working order of a machine and, in part, its significance for the enterprise's economy and reliability of deliveries	understands the significance of servicing measures for the working order of a machine and for the enterprise's economy and reliability of deliveries
Use of fuels and lubricants	adequately knows the classifications and applications of fuels and lubricants	knows, for the most part, the classifications and applications of fuels and lubricants, and chooses the correct lubricant for different applications	knows, in depth, the classifications and applications of fuels and lubricants, and efficiently chooses the correct lubricant for different applications
Engine operation Utilisation of technology and information technology	knows, for the most part, the principle of function of a 4-stroke diesel engine and the significance of system servicing in keeping engines in working order	knows the principle of function and structure of a 4-stroke diesel engine and the significance of system servicing in keeping engines in working order	thoroughly knows the principle of function and structure of a 4-stroke diesel engine and the significance of system servicing in keeping engines in working order

Operating the hydraulics system and electrical devices	reads hydraulics and electrical diagrams acceptably. Knows, for the most part, the central working principles of the more common components.	reads hydraulics and electrical diagrams correctly and forms an overall view of system operation. Knows the central working principles of the more common components	reads hydraulic and electrical diagrams faultlessly and forms a clear overall view of system operation. Knows thoroughly the structure and working principles of the more common components
Familiarity with the power transmission, and body and undercarriage structures of forest machines	adequately knows the working principles of the power transmission systems used in forest machines and excavators and lorries	knows the structures and working principles of the power transmission systems used in forest machines and excavators and lorries	thoroughly knows the structures and working principles of the power transmission systems used in forest machines and excavators and lorries
	adequately knows the working principles of the body and undercarriage structures and the control and brake devices of lorries, and of other solutions differing from forest machines and excavators	knows, for the most part, the structures and working principles of the body and undercarriage structures and the control and brake devices of lorries, and of other solutions differing from forest machines and excavators	thoroughly knows the structures and working principles of the body and undercarriage structures and the control and brake devices of lorries, and of other solutions differing from forest machines and excavators
Use of auxiliary devices and equipment Utilisation of technology and information technology	knows the working principles of the various auxiliary devices at an acceptable level.	knows, for the most part, the working principles of the various auxiliary devices, their operation, and understands their significance for the performance of a machine.	thoroughly knows the working structure and principles of the various auxiliary devices, their operation, and understands their significance for the performance of a machine.
Use of implements:			
Loader Felling Head and other implement to be attached to a prime mover Technology and information technology	adequately knows the working principle of an implement attached to a forest machine or excavator or to a log truck	knows, for the most part, the working principle of operation and structure of an implement attached to a forest machine or excavator or to a log truck	knows the working principle of operation and structure of an implement attached to a forest machine or excavator or to a log truck
	knows the working principle of the electrical or mechanical control of an implement and the significance of the adjustments for the performance of the implement	knows, for the most part, the working principle of the electrical or mechanical control of an implement and applies this knowledge when making adjustments affecting the performance of the implement	thoroughly knows the working principle of the electrical or mechanical control of an implement and applies this knowledge faultlessly when making adjustments affecting the performance of the implement

Technological and information technology know-how	uses the various audio-visual tools in reporting the results of his/her work fairly well.	expertly uses various audio-visual tools and presentation methods when reporting on the results of his/her work.	expertly uses various audio-visual tools and presentation methods when reporting on the results of his/her work.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Learning and problem solving	uses, handles, and reads the necessary measuring equipment in an acceptable way	uses, handles, and reads the necessary measuring equipment correctly	uses, handles, and reads the necessary measuring equipment correctly and accurately
Health, safety and ability to function	attends, under guidance, to work-specific protection equipment and follows safety instructions and regulations	attends, almost independently, to work-specific protection equipment and follows safety instructions and regulations	attends, independently and in an exemplary fashion, to work-specific protection equipment and follows safety instructions and regulations
Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations and adapts, where necessary, his /her performance accordingly.	functions as an equal member of a team.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by carrying out, in accordance with his/her specialisation, the daily inspections of a forest machine, a lorry or an excavator as well as the frequently repeated servicing and maintenance work, and the operator-specific adjustments in work site conditions. Moreover, he/she pinpoints, in accordance with his/her specialisation, mechanical, electrical and/or hydraulic faults in a forest machine, lorry or excavator, and determines the need for repairs or eliminates the fault. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process, excluding preparatory work for demanding repairs
- ◆ mastering the work method, equipment and material in its entirety
- ◆ underpinning knowledge: background knowledge needed in inspections, servicing, and maintenance and adjustments and troubleshooting
- ◆ key competences for lifelong learning: health, safety and ability to function and learning and problem solving

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods. When assessing a student, who has completed the Class C driver examination, the requirements set out in *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and in decree 640/2007 must be taken into account.

4.3.2 Mechanised timber production

Vocational skills requirements

The student or candidate knows how

- ◆ to plan and carry out the mechanised felling of trees
- ◆ to prepare timber assortments mechanically
- ◆ to measure the quality of the timber assortments on the work site
- ◆ to use the IT applications controlling the functions of a forest machine and those that are related to data transmission, including, among others, the IT control systems of a machine, the data transmission system, and the systems related to a machine's settings
- ◆ to take into account in his/her work the requirements set by sound silviculture and management of the environment
- ◆ to keep a forest machine and its auxiliary devices and equipment in working order and serviced
- ◆ to install the equipment
- ◆ to calculate his/her own labour costs.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of mechanised timber harvesting	draws up, under guidance, an acceptable felling plan for a timber harvesting site in which management of the environment, mechanised timber harvesting, and the logistical timber procurement chain have been merged to form a working whole	draws up, almost independently, a functioning felling plan for a timber harvesting site in which management of the environment, mechanised timber harvesting, and the logistical timber procurement chain have been merged to form a working whole	draws up independently a high-quality felling plan for a timber harvesting site in which management of the environment, mechanised timber harvesting, and the logistical timber procurement chain have been merged faultlessly and thoroughly to form a working whole
Mechanised preparation of timber assortments	adequately masters the operating technique and maintenance of a single machine used in the mechanised preparation of timber assortments	masters, for the most part, the operating technique and maintenance of at least one machine used in the mechanised preparation of timber assortments	masters, thoroughly and faultlessly, the operating technique and maintenance of at least one machine used in the mechanised preparation of timber assortments
Utilisation of technology and information technology	handles a forest machine in a controlled manner in easy harvesting conditions	handles a forest machine in a faultless manner in a variety of harvesting conditions	handles a forest machine in a faultless manner and in accordance with the principles of economy and efficiency in a variety of harvesting conditions
	adheres, under guidance, to the quality management instructions in the harvesting of timber assortments, and measures their quality acceptably	adheres, almost independently, to the quality management instructions in the harvesting of timber assortments, and measures their quality at the basic level	independently adheres to the quality management instructions in the harvesting of timber assortments, and measures their quality faultlessly

Transfer of forest machines	adequately prepares a forest machine for transfer and ties down a machine in the way required by the regulations	prepares a forest machine for transfer and ties down a machine in the way required by the regulations	faultlessly prepares a forest machine for transfer and ties down a machine in the way required by the regulations and transfers a machine safely using a transfer lorry fulfils the basic vocational competence level of lorry drivers
Treatment of commercial forest stands Sustainable development	adheres in his/her work, under guidance, to the foremost regulations and instructions applying to the treatment of commercial forest stands and prevents environmental damage typically caused in mechanised wood harvesting, e.g. fuel and oil spills	adheres in his/her work, almost independently, to the foremost regulations and instructions applying to the treatment of commercial forest stands and prevents environmental damage typically caused in mechanised wood harvesting, e.g. fuel and oil spills	adheres in his/her work independently to the regulations and instructions applying to the treatment of commercial forest stands and prevents environmental damage typically caused in mechanised wood harvesting, e.g. fuel and oil spills
Cost and profitability calculations Initiative and entrepreneurship Application of mathematics	knows, in part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work	knows, for the most part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work and develops the cost correlation of routine jobs	knows the cost structure of his/her work, calculates the costs, and realistically estimates the profitability of his/her work and develops the cost correlation of his/her work
Care and adherence to instructions Vocational ethics	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work with care and well, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated.	shows proactiveness, is largely diligent and motivated.	is proactive, diligent, motivated, and appreciative of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Use of auxiliary devices and equipment	installs equipment and operates auxiliary devices and equipment under guidance	installs equipment and operates auxiliary devices and equipment almost independently	installs equipment and operates auxiliary devices and equipment independently and faultlessly

Management of functions	uses IT applications, which control a forest machine's computer and functions related to data transmission under guidance	uses IT applications, which control a forest machine's computer and functions related to data transmission almost independently	uses IT applications, which control a forest machine's computer and functions related to data transmission independently and faultlessly
Use of control automation	acceptably uses a forest machine's control automation levels in his/her work.	uses, for the most part, a forest machine's control automation levels in his/her work.	faultlessly uses a forest machine's control automation levels in his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Ensuring the quality of timber harvesting	makes and/or sorts the timber assortments acceptably as per the dimensional and quality requirements, and adheres to the foremost instructions regarding the storage of the timber.	makes and/or sorts the timber assortments, for the most part, as per the dimensional and quality requirements, and adheres to instructions regarding the storage of the timber.	makes and/or sorts the timber assortments, faultlessly as per the dimensional and quality requirements, and adheres precisely to instructions regarding the storage of the timber.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	adheres to the foremost work safety regulations, orders and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions
	uses protection equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question	uses tidy and appropriate protective clothing and protective equipment intended to be worn during the work in question
	takes into account the foremost hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up the necessary notifications pertaining to hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up the necessary notifications pertaining to hazardous situations	anticipates, identifies, and takes into account the hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up without delay the necessary notifications pertaining to hazardous situations
	operates forest machines safely and, in part, ergonomically	operates forest machines safely and, for the most part, ergonomically	operates forest machines safely and ergonomically

	has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	takes the foremost safety viewpoints and health factors into consideration in the planning of his/her own work and maintains safety and ergonomics of the work environment in familiar situations	conducts himself/herself independently such that he/she maintains a healthy life style and the ability to function and work	knows how to independently develop different ways of maintaining and promoting a healthy life style and the ability to function and work
	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	takes the safety viewpoints and health factors into consideration in the planning of his/her own work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into consideration independently in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
	uses safely protective equipment, tools, and work methods in compliance with the instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired
	knows how to utilise technical security systems and takes them, under guidance, into consideration in his/her work	independently knows how to take into consideration technical safety systems in his/her work	
	takes into account in his/her work the associated necessary obligations related to work safety and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry
Vocational ethics	adheres to the central regulations pertaining to employees' rights, benefits, and obligations	adheres to the rules of the workplace community and the central regulations pertaining to employees' rights, benefits, and obligations	adheres to the rules of the workplace community and action models, and the central regulations pertaining to employees' rights, benefits, and obligations
	accepts the implementation of the principles of sustainable development in his/her field	assumes a positive attitude to the implementation of the principles of sustainable development in his/her field	promotes the implementation of the principles of sustainable development in his/her field

Learning and problem solving	solves frequently repeated problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
		under guidance, assesses his/her own work in accordance with the given criteria	avoids the reoccurrence of problems by changing his/her way of doing things
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	applies, in general, basic knowledge in his/her work with a qualitative and successful outcome	assesses his/her own work under guidance in accordance with the given criteria
Interaction and cooperation	functions as a member of the team in familiar interaction situations	functions as a member of the team in familiar interaction situations and changes, where necessary, his/her own behaviour	functions as an equal member in the team and takes into account the opinions of others
		discusses his/her work proactively	discusses his/her actions proactively and in an easy-going manner and is in possession of good listening skills
	operates correctly in frequently repeated customer situations.	functions in customer situations in such a way as to reinforce the preservation of the customer relationship.	functions in customer situations and as part of a networked enterprise in such a way as to reinforce the preservation of customer relationships and to promote the forming of new customer relationships.

Ways of demonstrating vocational skills

The student or the person demonstrates his/her vocational skills by planning a marked stand and by producing mechanically prepared timber assortments on a forest work site. The vocational skills demonstration can also be carried out as a display process or as partial skills demonstrations, and these can be carried out as flexible entities from the viewpoint of working life and the implementation of the skills demonstration. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: planning and implementation of mechanised wood harvesting, treatment of commercial forest stands, and care and adherence to instructions
- ◆ mastering the work method, equipment, and material: management of functions, use of control automation, and application of work methods
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, vocational ethics, learning and problem solving, and interaction and cooperation skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods. When assessing a student, who has completed the Class C driver examination, the requirements set out in *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and decree 640/2007 must be taken into account.

4.3.3 Timber transport by lorry

Vocational skills requirements

The student or candidate knows how

- ◆ to load, transport and store timber when using an articulated log truck for transporting timber from a roadside storage to the conversion site to an intermediate storage point
- ◆ to carry out tasks related to the control and use of the IT control systems of a log truck for transporting timber and to carry out data transmission using the said systems
- ◆ to perform the driver-specific adjustments on a log truck intended for transporting timber
- ◆ to carry out maintenance tasks related to keeping a log truck intended for transporting timber and its equipment in working order
- ◆ to function as the driver of a log truck intended for transporting timber while taking into account work safety, road traffic regulations, orders, and instructions as well as the requirements pertaining to the care of the environment
- ◆ to operate the log truck's loader
- ◆ to carry out the detaching and attaching of the log truck trailer, and installation of other auxiliary equipment

- ◆ to install and use the auxiliary equipment of a log truck intended for transporting timber
- ◆ to keep the log truck and its equipment in working order
- ◆ to pinpoint faults and report them to be repaired
- ◆ to carry out the various work stages involved in roadside storage, intermediate storage, and terminal storage of timber
- ◆ to operate the positioning, data transmission, and transportation guidance system installed on a log truck intended for transporting timber
- ◆ to complete the Class CE driver examination and the basic level vocational competence training as required by *Laki kuormaja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and decree 640/2007
- ◆ to adhere to the contents of the documents, regulations, orders, and instructions required when taking timber out of the country or when bringing timber into the country
- ◆ to identify what the foremost success factors applying to a timber transportation enterprise are and how to calculate the expenses of his/her labour input.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module. The requirements in accordance with *Laki kuormaja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and decree 640/2007 must be taken into account in the assessment.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Transportation of timber using a lorry	drives a log truck in a controlled manner in easy conditions. Works, partly in a responsible manner, at a timber storage point.	drives a log truck in a faultless manner under normal conditions. Works in a responsible manner at a timber storage point.	drives a log truck in a faultless manner in a variety of conditions. Works in a responsible manner at a timber storage point.
	handles the lorry's loader and other basic and auxiliary equipment items in a controlled manner	handles the lorry's loader and other basic and auxiliary equipment items in a fairly experienced manner	handles the lorry's loader and other basic and auxiliary equipment items in an experienced and faultless manner

Keeping things in working order	keeps a log truck acceptably in working order or pinpoints faults and reports on them	keeps a log truck in working order or pinpoints faults and reports on them	keeps a log truck in such working order that it can be operated economically and effectively or pinpoints and reports on faults
Cost and profitability calculations Initiative and entrepreneurship Application of mathematics	knows, in part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work	knows, for the most part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work and develops the cost correlation of routine jobs	knows the cost structure of his/her work, calculates the costs, and realistically estimates the profitability of his/her work and develops the cost correlation of his/her work
Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated	shows initiative, is largely diligent and motivated	is proactive, diligent, motivated, and appreciative of his/her work
Presentation of work done Communication and media know-how	presents and reports the results of his/her work in brief.	presents and reports the results of his/her work in different ways.	presents and reports the results of his/her work analytically and logically.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Using a transportation plan	acceptably interprets a plan for transporting timber and transportation control systems, and makes use of the lorry's on-board global positioning system. Masters, under guidance, the computerised login functions at terminals.	correctly interprets for the most part a plan for transporting timber and makes use of transportation control systems and of the lorry's on-board global positioning system when drawing up a plan. Masters, almost independently, the computerised login functions at terminals.	faultlessly and correctly interprets a plan for transporting timber and makes appropriate use of transportation control systems and of the lorry's on-board global positioning system when drawing up a plan. Masters, independently and faultlessly, the computerised login functions at terminals.
Use of control systems Utilisation of technology and information technology	acceptably uses the IT applications related to data transmission and controlling log truck's on-board computer and functions.	uses, for the most part correctly, the IT applications related to data transmission and controlling the log truck's on-board computer and functions.	uses, appropriately and faultlessly, the IT applications related to data transmission and controlling the log truck's on-board computer and functions.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Roadside storage, intermediate storage, and terminal storage	takes the foremost silvicultural, environmental and quality management instructions into account, for the most part in connection with operating at storage points	takes the silvicultural, environmental and quality management instructions into account in connection with operating at storage points	takes the silvicultural, environmental and quality management instructions into account, in an exemplary fashion, in connection with operating at storage points
	knows the foremost timber storage instructions and procedures when transporting timber and unloading timber onto railway wagons, log-floating storage points or intermediate storage points	knows, for the most part, the timber storage instructions and procedures when transporting timber and unloading timber onto railway wagons, log-floating storage points or intermediate storage points	thoroughly knows the timber storage instructions and procedures when transporting timber and unloading timber onto railway wagons, log-floating storage points or intermediate storage points
	adequately knows the weighing operations, book entries, and voucher functions needed when delivering timber to terminals, and carries out these functions correctly under guidance	knows, for the most part, the weighing operations, book entries, and voucher functions needed when delivering timber to terminals, and carries out these functions correctly and almost independently	thoroughly knows the weighing operations, book entries, and voucher functions needed when delivering timber to terminals, and carries out these functions independently and faultlessly
Adherence to regulations, orders, and instructions	keeps a log truck in the condition required by road traffic legislation and adheres to traffic rules acceptably	keeps a log truck in the condition required by road traffic legislation and adheres to traffic rules	keeps a log truck in the condition required by road traffic legislation and adheres to traffic rules in an exemplary fashion
Class CE vocational competence requirements	adequately knows the vocational competence requirements of Class CE driver's licence as per the regulations.	knows, for the most part, the vocational competence requirements of Class CE driver's licence as per the regulations.	thoroughly knows the vocational competence requirements of Class CE driver's licence as per the regulations.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety and ability to function	The student or candidate		
	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions
	uses safety equipment intended for the work in question	uses appropriate safety clothing and safety equipment intended for the work in question	uses tidy and appropriate safety clothing and safety equipment intended for the work in question
	adequately masters safe methods of work and adapts them, under guidance, to the work situation	masters, for the most part, safe methods of work, and adequately applies them to the work situation	thoroughly masters safe methods of work, and applies them, thoroughly and faultlessly, to the work situation
	takes into account the foremost hazardous elements related to the work environment, methods of work, and truck transportation of timber, and submits reports on hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the work environment, methods of work, and truck transportation of timber, and submits reports on hazardous situations	anticipates, identifies, and thoroughly takes into account the hazardous elements related to the work environment, methods of work, and truck transportation of timber, and submits without delay reports on hazardous situations
	operates a log truck, its control devices, and auxiliary devices and equipment ergonomically, safely, and partly in the correct manner	operates a log truck, its control devices, and auxiliary devices and equipment safely, and, for the most part, in an ergonomically-correct manner	operates a log truck, its control devices, and auxiliary devices and equipment safely, and in an ergonomically-correct manner
	has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	takes health and safety factors into account in his/her planning of his/her own work and maintains the safety and ergonomics of the work environment in familiar situations	conducts himself/herself independently such that he/she maintains a healthy life style and the ability to function and work	knows how to independently develop different ways of maintaining and promoting a healthy life style and the ability to function and work

	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	takes the safety viewpoints and health factors into consideration in the planning of his/her own work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into consideration independently in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
	uses safely protective equipment, tools, and work methods in compliance with the instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	
	knows how to utilise technical security systems and takes them, under guidance, into consideration in his/her work	independently knows how to take into consideration technical safety systems in his/her work	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired
	takes into account in his/her work the associated necessary obligations related to work safety and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work related to work safety and knows the foremost regulations in the field of forestry
Vocational ethics	adheres to the central regulations pertaining to employees' rights, benefits, and obligations	observes the rules of the workplace community and the central regulations pertaining to employee's rights, benefits, and obligations	adheres to the rules of the workplace community and action models, and the central regulations pertaining to employees' rights, benefits, and obligations
	accepts the implementation of the principles of sustainable development in his/her field	assumes a positive attitude to the implementation of the principles of sustainable development in his/her field	promotes the implementation of the principles of sustainable development in his/her field
Learning and problem solving	solves frequently repeated problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
		assesses his/her own work under guidance in accordance with the given criteria	avoids the reoccurrence of problems by changing his/her way of doing things
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	applies, in general, basic knowledge in his/her work with a qualitative and successful outcome	assesses his/her own work in accordance with the given criteria
			applies basic knowledge in his/her work with a qualitative and successful outcome

Interaction and cooperation	functions as a member of the team in familiar interaction situations	functions as a member of the team in familiar interaction situations and changes, where necessary, his/her own behaviour	functions as an equal member in the team and takes into account the opinions of others
		discusses his/her work proactively	discusses his/her actions proactively and in an easy-going manner, and is in possession of good listening skills
	operates correctly in frequently repeated customer situations.	functions in customer situations in such a way as to reinforce the preservation of the customer relationship.	functions in customer situations and as part of a networked enterprise in such a way as to reinforce the preservation of customer relationships and to promote the forming of new customer relationships.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by loading, transporting, and storing timber using an articulated log truck to transport the timber from a roadside storage point to a conversion site or to an intermediate storage point. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: lorry transportation of timber, care and adherence to instructions
- ◆ mastering the work method, equipment, and material in its entirety
- ◆ underpinning knowledge: competence related to storage and adherence to regulations, orders, and instructions
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, vocational ethics, learning and problem solving, and interaction and cooperation skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods. The requirements in accordance with *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and the decree 640/2007 must be taken into account in the assessment.

4.3.4 Mechanised forest improvement work

Vocational skills requirements

The student or candidate knows how

- ◆ to plan and carry out the work involved in at least three types of forest improvement work using a mechanised application on a forest improvement work site. This work can include restoration of a forest stand, mechanised forest regeneration (seeding or planting), site preparation, stump extraction, forest drainage, forest road construction, forest road maintenance
- ◆ to carry out the work related to the management and use of the IT control systems installed on a forest improvement machine
- ◆ to perform the driver-specific adjustments on a machine and the work related to maintaining a machine in working order
- ◆ to take into account silvicultural and environmental regulations and other requirements when carrying out his/her work
- ◆ to carry out the foremost service work in accordance with a machine's operating hours, to maintain a machine and its equipment in working order, and to pinpoint and to report any faults needing to be repaired
- ◆ to install and to operate a machine's auxiliary equipment
- ◆ to operate the basic functions of a machine's computer and the IT applications controlling the functions of a machine and IT application related to data transmission
- ◆ to calculate the costs of his/her work and what the foremost success factors of a forest improvement enterprise are
- ◆ to adhere to the legislation and instructions related to occupational health and work safety in forestry and forest machine entrepreneurship
- ◆ to emphasise his/her vocational competence by completing the Class C driver examination and the basic level vocational competence training as required by *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and decree 640/2007.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning and implementation of work	draws up an acceptable forest improvement plan. Takes, under guidance, into account silvicultural and environmental viewpoints and endeavours to carry out his/her work as per the plan.	draws up, independently for the most part, forest improvement plans for various sites, takes into account silvicultural and environmental viewpoints, and carries out his/her work as per the plan	draws up, independently and faultlessly, forest improvement plans for various sites, takes into account silvicultural and environmental viewpoints, and carries out his/her work in quality manner as per the plan
Use and maintenance of machines	has adequate ability in using a machine as per a particular type of forest improvement work and the ability to use a machine's equipment and to maintain it	has, for the most part, the ability to use a machine as per at least three types of forest improvement work and the ability to use a machine's equipment and maintain it	faultlessly masters the use of a machine as per at least three types of forest improvement work and the ability to use a machine's equipment and maintain it
	works in a controlled way when operating a machine under normal conditions	works in a controlled way and for the most part in accordance with the principles of economy and efficiency when operating a machine in a variety of conditions	operates a machine in an easy-going and controlled manner, and in accordance with the principles of economy and efficiency when operating a machine in a variety of conditions
Quality monitoring of work	adheres to work quality management instructions in his/her work in frequently repeated situations. Monitors his/her work outcome and estimates and/or measures quality acceptably.	adheres, almost independently, to work quality management instructions in his/her work. Monitors his/her work outcome and estimates and/or measures quality successfully.	independently adheres to work quality management instructions in his/her work. Monitors his/her work outcome and estimates and/or measures quality thoroughly and faultlessly.
Transfer transportation of forest machines	adequately prepares a machine for transfer transportation and ties down a machine as required by the regulations	prepares a machine for transfer transportation and ties down a machine as required by the regulations	faultlessly prepares a machine for transfer transportation. Ties down a machine as required by the regulations and transfers a machine safely using a transfer lorry.
			fulfils the basic level of vocational competence requirements of a lorry driver

Silviculture and management of the environment	adheres, under guidance, to the foremost regulations, orders, and instructions in silviculture and management of the environment in his/her work	adheres, almost independently, to the foremost regulations, orders, and instructions in silviculture and management of the environment in his/her work	independently adheres to the regulations, orders, and instructions in silviculture and management of the environment in his/her work
Sustainable development	prevents damage being caused to the environment by machine work, e.g. fuel spills and oil spills	prevents damage being caused to the environment by machine work, e.g. fuel and oil spills	prevents damage being caused to the environment by machine work, e.g. fuel and oil spills
Cost and profitability calculations Initiative and entrepreneurship Application of mathematics	knows, in part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work	knows, for the most part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work and develops the cost correlation of routine jobs	knows the cost structure of his/her work, calculates the costs, and realistically estimates the profitability of his/her work and develops the cost correlation of his/her work
Management of customer situations Active citizenship and different cultures	functions correctly in frequently repeated customer situations, also in an international work environment	functions in customer situations in such a way that his/her actions reinforce the preservation of customer relationships; also in an international work environment	functions in customer situations and as a member of a networked enterprise in such a way that his/her actions reinforce the preservation of customer relationships and promote the formation of new customer relationships; also in an international work environment
Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated.	shows proactiveness, and is largely diligent and motivated.	is proactive, diligent, motivated, and appreciative of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Application of work methods	adequately masters the most common work methods and applies them to frequently repeated work situations	masters, for the most part, the work methods and applies them to normal work situations	masters the work methods and applies them faultlessly to different work situations

Use of IT systems	uses, under guidance, IT applications controlling a machine's computer, and is able to use those functions related to data transmission	uses, almost independently, the IT applications controlling a machine's computer, and is able to use those functions related to data transmission	uses, independently and faultlessly, the IT applications controlling a machine's computer, and is able to use those functions related to data transmission
	makes adequate use of possible control automation levels of a machine in his/her work.	makes use, for the most part, of possible control automation levels of a machine in his/her work.	makes faultless use of possible control automation levels of a machine in his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Familiarity with instructions	has an adequate degree of familiarity with the general instructions of different types of work	knows, for the most part, the general instructions related to the different types of work	thoroughly knows the general instructions related to the different types of work
Site preparation Heeding aesthetic values	adequately knows the effect of soil types and vegetation on the soil's preparation and the excavating properties	knows, for the most part, the effect of soil types and vegetation on the soil's preparation and the excavating properties	thoroughly knows the effect of soil types and vegetation on the soil's preparation and the excavating properties
Stump extraction	knows acceptably the site preparation and stump extraction methods applicable to basic work sites and the requirements of environmental management	knows the site preparation and stump extraction methods applicable to basic work sites and the requirements of environmental management	knows the site preparation and stump extraction methods applicable to the various work sites and the requirements of environmental management
Forest road construction and maintenance Heeding aesthetic values	adequately knows the work stages and work methods related to forest road construction and maintenance, and the requirements of environmental management	knows, for the most part, the work stages and work methods related to forest road construction and maintenance, and the requirements of environmental management	thoroughly knows the work stages and work methods related to forest road construction and maintenance, and the requirements of environmental management
Peatland drainage	adequately knows the work stages and work methods related to the ditching and maintaining of ditches and the requirements of environmental management	knows, for the most part, the work stages and work methods related to the ditching and maintaining of ditches and the requirements of environmental management	thoroughly knows the work stages and work methods related to the ditching and maintaining of ditches and the requirements of environmental management

Restoration work Taking aesthetics into account	adequately knows the significance of restoration work for the environment and knows the work stages and work methods related to the mechanical treatment of sites to be restored.	knows, for the most part, the significance of restoration work for the environment and knows the work stages and work methods related to the mechanical treatment of sites to be restored.	knows the significance of restoration work for the environment and knows the work stages and work methods related to the mechanical treatment of sites to be restored.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health and safety and ability to function	The student or candidate		
	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions
	uses protection equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question	uses tidy and appropriate protective clothing and protective equipment intended to be worn during the work in question
	takes into account the foremost hazardous elements related to the work environment and work methods and to the use of machines, and makes the required reports on hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the work environment and work methods and to the use of machines, and makes the requires reports on hazardous situations	anticipates, identifies, and thoroughly takes into account the hazardous elements related to the work environment and work methods and to the use of machines, and makes the required reports without delay on hazardous situations
	operates machines safely and, in part, ergonomically	operates machines safely and, for the most part, ergonomically	operates machines safely and ergonomically
	has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	takes the foremost safety viewpoints and health factors into consideration in the planning of his/her own work and maintains safety and ergonomics of the work environment in familiar situations	conducts himself/herself independently so that he/she maintains a healthy lifestyle and the ability to function and work	knows how to independently develop different ways of maintaining and promoting healthy lifestyle and the ability to function and work

	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	takes the safety viewpoints and health factors into consideration in the planning of his/her own work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into consideration independently in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
	uses safely protective equipment, tools, and work methods in compliance with instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired
	knows how to utilise technical security systems and takes them, under guidance, into consideration in his/her work	independently knows how to take into consideration technical safety systems in his/her work	
	takes into account in his/her work the associated necessary obligations related to work safety and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry
Vocational ethics	adheres to the central regulations pertaining to employees' rights, benefits, and obligations	observes the rules of the workplace community and the central regulations pertaining to employees' rights, benefits, and obligations	adheres to the rules of the workplace community and action models, and the central regulations pertaining to employees' rights, benefits, and obligations
	accepts the implementation of the principles of sustainable development in his/her field	assumes a positive attitude to the implementation of the principles of sustainable development in his/her field	promotes the implementation of the principles of sustainable development in his/her field
Learning and problem solving	solves frequently repeated problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
		assesses his/her own work, under guidance, in accordance with the given criteria	avoids the reoccurrence of problems by changing his/her way of doing things
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	applies, in general, basic knowledge in his/her work with a qualitative and successful outcome	assesses his/her own work (under guidance) in accordance with the given criteria
			applies basic knowledge in his/her work with a qualitative and successful outcome

Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations and changes, where necessary, his/her own behaviour	functions as an equal member in the team and takes into account the opinions of others
		discusses his/her work proactively.	discusses his/her actions proactively and in an easy-going manner, and is in possession of good listening skills.

Ways of demonstrating vocational skills

The student demonstrates his/her vocational skills by carrying out at least one type of forest improvement work mechanically on a forest improvement site. In addition, candidate shall be required to perform work belonging to two other forest improvement types of work. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process: planning and implementation of forest improvement work, use of machines, quality monitoring of the work, silviculture and environmental management, and care and adherence to instructions
- ◆ mastering the work method, equipment, and material
- ◆ underpinning knowledge: familiarity with instructions
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, vocational ethics, learning and problem solving, and interaction and cooperation skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.3.5 Extraction of timber

Vocational skills requirements

The student or candidate knows how

- ◆ to plan the mechanised extraction of timber on a forest work site as part of the logistical chain of the wood procurement process
- ◆ to carry out the mechanised extraction of timber
- ◆ to take into account in his/her work the requirements set by sound silviculture and management of the environment
- ◆ to keep a forest machine and its auxiliary devices and equipment in working order and serviced
- ◆ to install the equipment
- ◆ to calculate his/her own labour costs
- ◆ to emphasise his/her vocational competence by completing the Class C driver examination and the basic level vocational competence training, part 4.3.6, as required by *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and decree 640/2007.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of mechanised wood harvesting	draws up, under guidance, an adequate extraction plan in which management of the environment, mechanised wood harvesting, and the logistical wood procurement chain have been merged to form a working whole	draws up, almost independently, a functioning extraction plan in which management of the environment, mechanised wood harvesting, and the logistical wood procurement chain have been merged to form a working whole	draws up independently a quality extraction plan for a wood harvesting site in which management of the environment, mechanised wood harvesting, and the logistical wood procurement chain have been merged faultlessly and thoroughly to form a working whole

Mechanised extraction of timber Utilisation of technology and information technology	adequately masters the operating technique and maintenance of one forwarder designed for the extraction of timber	masters, for the most part, the operating technique and maintenance of at least one forwarder designed for the extraction of timber	masters, thoroughly and faultlessly, the operating technique and maintenance of at least one forwarder designed for the extraction of timber
	handles a forest machine in a controlled manner in easy harvesting conditions	handles a forest machine in a faultless manner in a variety of harvesting conditions	handles a forest machine in a faultless manner and in accordance with the principles of economy and efficiency in a variety of harvesting conditions
	adheres, under guidance, to the quality management instructions in the harvesting of timber assortments, and measures their quality acceptably	adheres, almost independently, to the quality management instructions in the harvesting of timber assortments, and measures their quality at the basic level	independently adheres to the quality management instructions in the harvesting of timber assortments, and measures their quality faultlessly
Transfer of forest machines	adequately prepares a forest machine for transfer and ties down a machine in the way required by the regulations	prepares a forest machine for transfer and ties down a machine in the way required by the regulations	prepares a forest machine for transfer and ties down a machine in the way required by the regulations and transfers a machine safely using a transfer lorry
			fulfils the basic vocational competence level of lorry drivers
Treatment of commercial forest stands Sustainable development	adheres in his/her work, under guidance, to the foremost regulations and instructions applying to the treatment of commercial forest stands and prevents environmental damage typically caused in mechanised wood harvesting, e.g. fuel and oil spills	adheres in his/her work, almost independently, to the foremost regulations and instructions applying to the treatment of commercial forest stands and prevents environmental damage typically caused in mechanised wood harvesting, e.g. fuel and oil spills	independently adheres in his/her work to the regulations and instructions applying to the treatment of commercial forest stands and prevents environmental damage typically caused in mechanised wood harvesting, e.g. fuel and oil spills
Cost and profitability calculations Initiative and entrepreneurship Application of mathematics	knows, in part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work	knows, for the most part, the cost structure of his/her work, calculates the costs, and adequately estimates the profitability of his/her work and develops the cost correlation of routine jobs	knows the cost structure of his/her work, calculates the costs, and realistically estimates the profitability of his/her work and develops the cost correlation of his/her work
Care and adherence to instructions Vocational ethics	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated.	is proactive, and is largely diligent and motivated.	is proactive, diligent, motivated, and appreciative of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment, and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Utilisation of technology and information technology	installs equipment and operates auxiliary devices and equipment under guidance	installs equipment and operates auxiliary devices and equipment almost independently	installs equipment and operates auxiliary devices and equipment independently and faultlessly
	uses IT applications, which control a forest machine's computer and functions related to data transmission, under guidance	uses IT applications, which control a forest machine's computer and functions related to data transmission, almost independently	uses IT applications, which control a forest machine's computer and functions related to data transmission, independently and faultlessly
	acceptably uses a forest machine's control automation levels in his/her work	uses, for the most part, a forest machine's control automation levels in his/her work	faultlessly uses a forest machine's control automation levels in his/her work
Application of work methods	adequately masters the most common methods of work and applies them to frequently repeated work situations.	masters, for the most part, the methods of work and applies them to normal work situations.	masters the work methods and applies them faultlessly to different work situations.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Ensuring the quality of wood harvesting	makes and/or sorts the timber assortments acceptably as per the dimensional and quality requirements, and adheres to the foremost instructions regarding the timber storage	makes and/or sorts the timber assortments, for the most part, as per the dimensional and quality requirements, and adheres to instructions regarding the timber storage	makes and/or sorts the timber assortments, faultlessly as per the dimensional and quality requirements, and adheres precisely to instructions regarding the timber storage

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions

uses protection equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question
takes into account the foremost hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up the necessary notifications pertaining to hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up the necessary notifications pertaining to hazardous situations	anticipates, identifies, and takes into account the hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up without delay the necessary notifications pertaining to hazardous situations
operates forest machines safely and (in part) ergonomically	operates forest machines safely and, for the most part, ergonomically	operates forest machines safely and ergonomically
has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
takes the foremost safety viewpoints and health factors into consideration in the planning of his/her own work and maintains safety and ergonomics of the work environment in familiar situations	conducts himself/herself independently such that he/she maintains healthy lifestyle and the ability to function and work	knows how to independently develop different ways of maintaining and promoting healthy lifestyle and the ability to function and work
adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations	takes the safety viewpoints and health factors into consideration in the planning of his/her own work and maintains the safety and ergonomics of the work environment	independently takes the safety viewpoints and health factors into consideration in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
uses safely protective equipment, tools, and work methods in compliance with instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	
knows how to utilise technical security systems and, under guidance, takes them into consideration in his/her work	independently knows how to take into consideration technical safety systems in his/her work	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired

	takes into account in his/her work the associated necessary obligations related to work safety and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry
Vocational ethics	adheres to the central regulations pertaining to employees' rights, benefits, and obligations	observes the rules of the workplace community and the central regulations pertaining to employees' rights, benefits, and obligations	adheres to the rules of the workplace community and action models, and the central regulations pertaining to employees' rights, benefits, and obligations
	accepts the implementation of the principles of sustainable development in his/her field	assumes a positive attitude to the implementation of the principles of sustainable development in his/her field	promotes the implementation of the principles of sustainable development in his/her field
Learning and problem solving	solves frequently repeated problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
			avoids the reoccurrence of problems by changing his/her way of doing things
		assesses his/her own work, under guidance, in accordance with the given criteria	assesses his/her own work, under guidance, in accordance with the given criteria
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	applies, in general, basic knowledge in his/her work with a qualitative and successful outcome	applies basic knowledge in his/her work with a qualitative and successful outcome
Interaction and cooperation	functions as a member of the team in familiar interaction situations	functions as a member of the team in familiar interaction situations and changes, where necessary, his/her own behaviour	functions as an equal member in the team and takes into account the opinions of others
		discusses his/her work proactively	discusses his/her actions proactively and in an easy-going manner, and is in possession of good listening skills
	operates correctly in frequently repeated customer situations.	functions in customer situations in such a way as to reinforce the preservation of the customer relationship.	functions in customer situations and as part of a networked enterprise in such a way as to reinforce the preservation of customer relationships and to promote the forming of new customer relationships.

Ways of demonstrating vocational skills

The student or the person demonstrates his/her vocational skills by a harvesting plan for a marked stand and by extracting timber by machine on a forest work site. The vocational skills demonstration can also be carried out as a display process or as partial skills demonstrations, and these can be carried out as flexible entities from the viewpoint of working life and the implementation of the skills demonstration. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ♦ mastering the work process: planning and implementation of extraction, treatment of commercial forest stands, and care and adherence to instructions
- ♦ mastering the work method, equipment, and material: controlling of functions and application of work methods
- ♦ underpinning knowledge in its entirety
- ♦ key competences for lifelong learning: competence related to work safety and ergonomics, vocational ethics, learning and problem solving, and interaction and cooperation skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods. When assessing a student, who has completed the Class C driver examination, the requirements set out in *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and in decree 640/2007 must be taken into account.

4.3.6 Vocational competence at the basic level of transportation

This module of the qualification is the same as the Logistics Qualification module Vocational Competence at the Basic Level of Competence in Transportation. The module does not include further training.

4.4 STUDY PROGRAMME OR SPECIALISATION IN FOREST MACHINE INSTALLATION

4.4.1 Forest machine servicing

Vocational skills requirements

The student or candidate knows how

- ◆ to determine malfunctions in a machine's engine, power transmission, hydraulics, operating system, and electrical system using troubleshooting systems, various measurements, fault-halving methods, and hydraulics and electrical diagrams, and determine the need for repairing a forest machine based on circuit diagrams, measurements, and troubleshooting programs
- ◆ to perform fault analyses on the various components of the hydraulic system and to perform pressure measurements and adjustments in accordance with instructions and adherence to work safety
- ◆ to repair or replace components
- ◆ to carry out system servicing and repairs, to perform fault analyses, maintenance, and repairs on the hydraulics system and the electrical system and the power transmission and the engine at the forest work site
- ◆ to determine faults and repair needs on the various systems of 4-stroke engines
- ◆ to carry out regular engine servicing and adjustments
- ◆ to perform adjustments to the control currents and pressure levels and sensor testing of control and measurement systems
- ◆ to dispose of waste in the proper manner
- ◆ to perform the adjustments and program installations of the control and measurement systems of one modern-day harvester, and to test the performance of a machine
- ◆ to read and to interpret technical literature, including in one foreign language.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or the candidate		
Diagnoses	carries out troubleshooting acceptably making use of the hydraulic and electrical diagrams, electronic troubleshooting and/or diagnostics systems, and applies fault-halving methods acceptably in testing	carries out troubleshooting, for the most part independently, making use of the hydraulic and electrical diagrams, electronic troubleshooting and/or diagnostics systems, and endeavours to apply fault-halving methods in testing	carries out troubleshooting, independently and proceeding logically, making use of the hydraulic and electrical diagrams, electronic troubleshooting and/or diagnostics systems, and applies fault-halving methods thoroughly in testing
Use of hydraulics	adequately carries out the most common fault analyses on the various components of the hydraulic system and carries out pressure measuring and adjusting in accordance with instructions and adherence to work safety	carries out, independently for the most part, fault analyses on the various components of the hydraulic system and carries out pressure measuring and adjusting in accordance with instructions and adherence to work safety	carries out independently and proceeding logically, fault analyses on the various components of the hydraulic system and carries out pressure measuring and adjusting in accordance with instructions and adherence to work safety
Utilisation of technology and information technology	carries out the easiest component repairs and replacements	carries out component repairs and replacements faultlessly	carries out component repairs and replacements independently and faultlessly
	adequately carries out system servicing and repairs	carries out, independently for the most part, system servicing and repairs adherence to tidiness and work safety	carries out, independently and faultlessly, system servicing and repairs adherence to tidiness and work safety
Operating electrical technology	adequately carries out fault analyses on the electrical system and on different electronic components applying a multimeter. Uses troubleshooting systems under guidance	carries out, for the most part independently, fault analyses on the electrical system and on different electronic components applying a multimeter and troubleshooting systems	carries out, independently and proceeding logically, fault analyses on the electrical system and on different electronic components applying a multimeter and troubleshooting systems
Technology and utilisation of information technology	carries out the easiest component repairs or replacements	carries out component replacements faultlessly	carries out component repairs and replacements faultlessly

Operating combustion engines	adequately carries out fault analyses and repair need assessments on the different systems of 4-stroke engines	carries out, largely independently, fault analyses and repair need assessments on the different systems of 4-stroke engines using troubleshooting systems and various measurements	carries out, independently and proceeding logically, fault analyses and repair need assessments on the different systems of 4-stroke engines using troubleshooting systems and various measurements
	uses, under guidance, troubleshooting systems and various measurements	carries out regular maintenance and adjustments on engines	carries out, correctly and faultlessly, regular maintenance and adjustments on the engine
Use of equipment and auxiliary devices	adequately carries out the troubleshooting, servicing, and repairing of a machine's auxiliary heater and the central lubrication system	carries out, independently for the most part, the troubleshooting, servicing, and repairing of a machine's auxiliary heater and the central lubrication system	carries out, independently and proceeding logically, the troubleshooting, servicing, and repairing of a machine's auxiliary heater and the central lubrication system
Coping with communication situations Active citizenship and different cultures	communicates in the proper manner in different interaction situations, including multinational work environments, and discusses acceptably using the vocabulary of the field in question	communicates in the proper manner in different interaction situations, including multinational work environments, and discusses matters using, for the most part, the vocabulary of the field in question	communicates in the proper manner in different interaction situations, including multinational work environments, and discusses in depth and so that he/she is understood, using, the vocabulary of the field in question
Proficiency in languages Communication and media know-how	acceptably interprets technical literature written in a foreign language.	reads and interprets, correctly for the most part, technical literature written in a foreign language.	reads and understands technical literature written in a foreign language.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
Use of control, measurement, and steering systems Utilisation of technology and information technology	The student or candidate makes, under guidance, the adjustments to the pressure levels and the control currents of the control and measurement system, and tests the sensors	makes, for the most part independently, the adjustments to the pressure levels and the control currents of the control and measurement system, and tests the sensors, and installs and updates, for the most part independently, the system programs	makes, independently and correctly, the adjustments the pressure levels and the control currents of the control and measurement system, and tests the sensors, and installs and updates faultlessly the system programs

Electrical and pressure measurements	uses and reads acceptably the various meters used to measure resistance, voltage, current, and pressure	uses and reads, for the most part correctly and safely, the various meters used to measure resistance, voltage, current, and pressure	uses and reads, correctly and safely, the various meters used to measure resistance, voltage, current, and pressure
Use of fuels and lubricants	chooses the most common products suitable for a particular maintenance or lubrication target	chooses, for the most part independently, the products suitable for a particular maintenance or lubrication target	chooses independently the products suitable for a particular maintenance or lubrication target
Sustainable development	separates the waste formed in connection with servicing and material to be recycled, and disposes of them by placing them in places reserved for them	separates the waste formed in connection with servicing and material to be recycled, and disposes of them by placing them in places reserved for them	separates the waste formed in connection with servicing and material to be recycled, and disposes of them by placing them in places reserved for them
Care and adherence to instructions	carries out the work acceptably and adheres to instructions	carries out the work, almost independently and for the most part carefully, and adheres to instructions	carries out the work, independently and carefully, and adheres to instructions
Computers and management of resources	adequately masters the basic use of computers	masters, for the most part, acceptably the basic use of computers and management of resources	masters faultlessly the basic use of computers and management of resources
Use of troubleshooting programs Utilisation of technology and information technology	uses, under guidance, a machine's on-board troubleshooting programs.	uses, to some extent, a machine's on-board troubleshooting programs.	independently uses a machine's on-board troubleshooting programs.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
Diagnoses	adequately knows the functional whole made up of the electrical and hydraulic systems of forest machines	knows, for the most part, the automation structures of forest machines and the functional whole made up of the electrical and hydraulic systems	thoroughly knows the automation structures of forest machines and the functional whole made up of the electrical and hydraulic systems

Use of hydraulics Application of mathematics and natural sciences	adequately knows the foremost laws of mathematics and physics involved in the functioning of the hydraulics system and the quantities and units used	knows, for the most part, the foremost laws of mathematics and physics involved in the performance of the hydraulics system and the quantities and units used	thoroughly knows the foremost laws of mathematics and physics involved in the performance of the hydraulics system and the quantities and units used
	knows the symbols used on hydraulics diagrams and interprets the corresponding diagrams, and forms, under guidance, an overall picture of the system function	knows the symbols used on hydraulics diagrams and recognises these on a machine, and interprets the corresponding diagrams, and forms, an almost correct overall picture of the system function	thoroughly knows the symbols used on hydraulics diagrams and recognises these on a machine, and interprets the corresponding diagrams, and forms a correct overall picture of the system function
	adequately knows the working principles of the components of the hydraulic system as used in forest machines	knows, for the most part, the working principles, structures, and properties of the components of the hydraulic system as used in forest machines	thoroughly knows the working principles, structures, and properties of the components of the hydraulic system as used in forest machines
	adequately knows the principle involved in pressure/current measurement	knows, almost correctly, the principle involved in pressure/current measurement	knows thoroughly the principle involved in pressure/current measurement
Operating electrical technology Utilisation of technology and information technology	adequately knows the foremost quantities and units used in electrical technology	knows the foremost quantities and units used in electrical technology and knows, for the most part, how to determine their mutual effects mathematically	thoroughly knows the foremost quantities and units used in electrical technology, and knows thoroughly how to determine their mutual effects mathematically
	knows the foremost electrical diagram symbols, interprets diagrams with acceptable degree of correctness	knows the foremost electrical diagram symbols and recognises them on a machine, and interprets diagrams for the most part correctly, and forms an overall picture of the operation of the system	thoroughly knows the electrical diagram symbols and recognises them on a machine, and interprets diagrams correctly, and forms an overall picture of the operation of the system
	adequately knows the working principles of the components used in forest machines and the principle involved in measuring functional condition	knows, for the most part, the properties and working principles of the components used in forest machines and the principle involved in measuring functional condition	knows the structures, properties and working principles of the components used in forest machines and the principle involved in measuring functional condition
Utilisation of power transmission	adequately knows the parts and working principles of hydraulic brake systems and the power transmission	knows, for the most part, the parts and working principles of hydraulic brake systems and the power transmission	thoroughly knows the parts and working principles of hydraulic brake systems and the power transmission

Engine operation	adequately knows the working principle of 4-stroke engines and the significance of system maintenance for the performance of the engine	knows, for the most part, the structure of 4-stroke engines and the working principles of the systems, and the significance of system maintenance for the performance of the engine	thoroughly knows the structure of 4-stroke engines and the working principles of the systems, and the significance of system maintenance for the performance of the engine
	adequately knows the working principles of different fuel systems and the measures and the instructions related to their servicing	knows, for the most part, the working principles of different fuel systems and the measures and instructions related to their servicing and repair	thoroughly knows the structure and working principles of different fuel systems, and the measures and the instructions related to their servicing and repair
	adequately knows the working principle of the electronic unit and the sensors controlling the functioning of the engine	knows, for the most part, the working principle of the electronic unit and the sensors controlling the performance of the engine	thoroughly knows the working principle of the electronic unit and the sensors controlling the performance of the engine
Troubleshooting	adequately applies a knowledge base he/she has acquired in determining the faults indicated by various symptoms.	applies, independently for the most part, a knowledge base he/she has acquired in determining the faults indicated by various symptoms.	applies, independently and thoroughly, a knowledge base he/she has acquired in determining the faults indicated by various symptoms.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety, and ability to function	The student or candidate has a positive attitude towards safe operation and avoids risks in his/her work	is independently responsible for the safety of his/her actions	develops the safety of his/her actions independently
	conducts himself/herself, in part, such that he/she maintains a healthy lifestyle and the ability to function and work	conducts himself/herself independently such that he/she maintains a healthy lifestyle and the ability to function and work	knows how to independently develop different ways of maintaining and promoting a healthy lifestyle and the ability to function and work

	takes the foremost health and safety factors into account in the planning of his/her work and maintains the safety and ergonomics of the work environment in familiar situations	takes the safety viewpoints and health factors into consideration in the planning of his/her own work and maintains the safety and ergonomics of the work environment	takes the safety viewpoints and health factors into consideration independently in the planning of his/her own work and knows how to apply what he/she has learnt also in unexpected situations
	adheres to given instructions and does not cause hazards through his/her own actions and functions correctly in the event of accidents, hazardous situations, and threatening situations		
	uses safely protective equipment, tools, and work methods in compliance with instructions	knows how to assess the suitability of protective equipment, tools and work methods for the work in question	ensures the safety of tools and materials before these are put into use, and withdraws faulty tools to be repaired
	knows how to utilise technical security systems and takes them, under guidance, into consideration in his/her work	independently knows how to take into consideration technical safety systems in his/her work	
	takes into account in his/her work the most essential of his/her obligations related to work safety and is familiar with the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry	takes his/her obligations related to work safety into account in his/her work and knows the foremost regulations in the field of forestry
Learning and problem solving	solves the most common problem situations	solves the most common problem situations and assesses the reasons leading up to the problems	solves the most common problem situations
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	applies, in general, basic knowledge in his/her work with a qualitative and successful outcome	avoids the reoccurrence of problems by changing his/her way of doing things
Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations and changes, where necessary, his/her own behaviour.	applies basic knowledge in his/her work with a qualitative and successful outcome
			is able to function as an equal member in a team and takes into account the opinions of others
			is able to handle the feedback received by him/her.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by determining in work site conditions the functional fault of a machine's engine, power transmission, and hydraulic system and electrical system using troubleshooting systems, various measurements, and fault-halving methods, and hydraulics and electrical diagrams. In addition, he/she determines the need for repair. The skills demonstration can be arranged to include both servicing and maintenance and repair work insofar as this is normal from the viewpoint of the realisation of the skills demonstration and the practice in the working life. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ♦ mastering the work process: diagnostics, operating the hydraulic systems, operating electrical technology, and operating combustion engines
- ♦ management of work method, equipment and material in its entirety
- ♦ underpinning knowledge: background knowledge related to identifying functional faults in the engine, the power transmission, operation of the hydraulics system and the electrical system
- ♦ key competences for lifelong learning: competence related to work safety and ergonomics, and learning and problem solving skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.4.2 Forest machine maintenance and repairs

Vocational skills requirements

The student or candidate knows how

- ♦ to carry out 1,000–2,00 hours' regular maintenance and associated tasks on forest machines
- ♦ to detach, repair, install, and make the necessary settings for a component belonging to the engine, the power transmission, and the hydraulic and electrical systems
- ♦ to carry out work related to the maintenance and repairing of forest machines
- ♦ to carry out repair welding using electrode and MIG welding equipment

- ♦ to carry out the work associated with the maintenance and storage of welding equipment and the work in accordance with instructions connected to fire safety and work safety
- ♦ to make simple, dimensioned technical drawings using computerised drawing software as well as making these drawings manually
- ♦ to work in a customer-oriented manner and understand that the work of a forest machine technician is customer service work
- ♦ to read and interpret technical literature and to communicate using one foreign language
- ♦ to use the tools and measuring equipment associated with maintenance and repairs
- ♦ to dispose of waste in the proper manner.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Work planning and maintenance, servicing work and repair work	adequately carries out servicing and repair of forest machines and the attached implements and auxiliary devices, and proceeds appropriately while completing such routine tasks	carries out, independently for the main part, servicing and repair of forest machines and the attached implements and auxiliary devices, and proceeds appropriately while completing these tasks	carries out, independently and faultlessly, servicing and repair of forest machines and the attached implements and auxiliary devices, and proceeds appropriately and efficiently while completing these tasks
Mechanics Application of mathematics and natural sciences	carries out repairs of structures while taking into account, under guidance, strength doctrinal basic loads and calculations	carries out repairs of structures while taking into account, independently for the most part, strength doctrinal basic loads and calculations	carries out repairs of structures while independently taking into account strength doctrinal basic loads and calculations

Welding	carries out the most common repair welding on machines using one welding method while taking into account the essential fire safety and work safety guidelines	carries out, independently for the most part, repair welding on machines using both electrode and MIG welding methods while taking into account fire safety and work safety guidelines	carries out, independently and correctly, repair welding on machines using both electrode and MIG welding methods while taking into account fire safety and work safety guidelines
Machine drawing Utilisation of technology and information technology	makes, under guidance, simple dimensioned technical drawings using a computer-based drawing program and also knows how to make the drawings manually	makes, independently for the most part, simple dimensioned technical drawings using a computer-based drawing program and also knows how to make the drawings manually	independently makes simple and correctly dimensioned technical drawings using a computer-based drawing program and also knows how to make the drawings manually
Customer service Initiative and entrepreneurship	works acceptably as regards being customer-oriented	works, for the most part, in a customer-oriented manner	works in a customer-oriented manner and is aware that a technician's work is part of customer service
Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work with care and well, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated	shows initiative, is largely diligent and motivated	is proactive, diligent, motivated, and appreciative of his/her work
Self-assessment	estimates, in part, his/her work performance	assesses his/her work performance and development in an acceptable way	assesses his/her work performance and development from many aspects and thoroughly
Decision making Initiative and entrepreneurship	makes, for the most part, correct decisions and proceeds logically in frequently repeated tasks	makes correct decisions and proceeds logically in tasks	makes correct decisions quickly and proceeds logically in tasks
	adequately knows the cost factors affecting the price.	knows for the most part the cost factors affecting the price.	knows the cost factors affecting the pricing.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Use of tools and measuring equipment	operates the most common tools and measuring equipment correctly in servicing and repairs tasks	operates, independently for the most part and correctly, the tools and measuring equipment used in servicing and repair tasks	independently uses the tools and measuring equipment used in servicing and repair tasks faultlessly

Sustainable development Dealing with oils and other servicing waste	deals with and sorts, under guidance, the waste formed in servicing and repair tasks	deals with and sorts, almost independently, the waste formed in servicing and repair tasks	independently deals with and correctly sorts the waste formed in servicing and repair tasks
	separates the waste formed in connection with servicing and material to be recycled, and disposes of them by placing them in places reserved for them.	separates the waste formed in connection with servicing and material to be recycled, and disposes of them by placing them in places reserved for them.	separates the waste formed in connection with servicing and material to be recycled, and disposes of them by placing them in places reserved for them.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Welding	adequately knows the fundamentals of electrodes, gas, and MIG welding, and the welding methods, and the guidelines applying to the maintenance and storage of welding equipment and fire and work safety	knows, for the most part, the fundamentals of electrodes, gas, and MIG welding, and the welding methods and guidelines applying to the maintenance and storage of welding equipment and fire and work safety	knows the fundamentals of electrodes, gas, and MIG welding, and the welding methods, and guidelines applying to the maintenance and storage of welding equipment and fire and work safety
Machine drawing	adequately knows the standard applying to machine drawing and the principles of drawing technique, and draws simple mechanical drawings	knows, for the most part, the standard applying to machine drawing and the principles of drawing technique, and reads, interprets, and draws simple mechanical drawings	knows the standard applying to machine drawing and the principles of drawing technique, and reads, interprets, and draws simple mechanical drawings thoroughly
Use of mechanics Application of mathematics and natural sciences	adequately knows the fundamentals of the quantity system of mechanics and kinematics, dynamics and statics	knows, for the most part, the fundamentals of the quantity system of mechanics and kinematics, dynamics and statics and some of their applications	knows the fundamentals of the quantity system of mechanics and kinematics, dynamics and statics and some of their applications in everyday work
Maintenance, servicing, and repairs	adequately knows the operating environment of machines and the action modes required by servicing and repairs	knows, for the most part, the operating environment of machines and the action modes required by servicing and repairs and by customers	knows the operating environment of machines and the action modes required by servicing and repairs and by customers
	knows acceptably the procedures related to the procurement of spare parts.	knows, for the most part, the procedures related to the procurement of spare parts and accessories, and the various delivery procedures.	knows the procedures related to the procurement of spare parts and accessories, and the various delivery procedures.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Interaction and cooperation	performs adequately well in customer-service situations	performs appropriately in normal customer-service situations	performs appropriately and in an easy-going manner in customer-service situations
	discusses, under guidance, his/her performance and decisions he/she has made	discusses proactively his/her performance and his/her decision	discusses proactively and in an easy-going manner his/her performance and his/her decisions, and provides reliable justifications for them
	monitors developments in his/her field of work via the media	monitors developments in his/her field of work via the media and develops his/her vocational skills	systematically monitors developments in his/her field of work via the media and actively develops his/her vocational skills
Health, safety, and ability to function	takes, under guidance, care of job-specific protection equipment and adheres to safety instructions and regulations	takes, almost independently, care of job-specific protection equipment and adheres to safety instructions and regulations	takes care independently and in an exemplary fashion, of job-specific protection equipment and adheres to safety instructions and regulations
	identifies the foremost hazardous elements related to the work environment and methods of work and tools, and submits the required notifications concerning hazardous situations	identifies and takes into account the hazardous elements related to the work environment and methods of work and tools, and submits the required notifications concerning hazardous situations	identifies and takes thoroughly into account the hazardous elements related to the work environment and methods of work and tools, and submits without delay the required notifications concerning hazardous situations
Vocational ethics	adheres to the central regulations pertaining to employees' rights, benefits, and obligations	observes the rules of the workplace community and the central regulations pertaining to employees' rights, benefits, and obligations	adheres to the rules of the workplace community and action models, and the central regulations pertaining to employees' rights, benefits, and obligations
	accepts the implementation of the principles of sustainable development in his/her field.	assumes a positive attitude to the implementation of the principles of sustainable development in his/her field.	promotes the implementation of the principles of sustainable development in his/her field.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by carrying out the tasks related to regular 1,000–2,000 hours' maintenance of a forest machine in field conditions. He/she is required to detach, repair, and reinstall, and make the settings for a component belonging to the engine, the power transmission, and the hydraulics and electrical system in accordance with the vocational skills requirements. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process in its entirety
- ◆ management of work methods, equipment and material in its entirety
- ◆ underpinning knowledge: background knowledge related to maintenance, servicing, and repairs
- ◆ key competences for lifelong learning: adherence to work safety instructions and regulations and handling of oils and other waste.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.4.3 Operation of forest-improvement machines

Vocational skills requirements

The student or candidate knows how

- ◆ to act as a driver of a machine complaint with a specific type of forest improvement work
- ◆ to plan and to carry out the work of a specific type of forest improvement work on a forest improvement work site
- ◆ to keep a forest improvement machine in working order
- ◆ to operate a machine and carry out often occurring operation-time-based maintenance tasks and to pinpoint and report faults needing to be remedied
- ◆ to operate the auxiliary equipment of a forest improvement machine needed in forest improvement work
- ◆ to use the IT applications directing the foremost functions of a machine and functions related to data transmission.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning and implementation of work	produces, under guidance, an acceptable site-specific plan for a forest improvement site, takes into account silvicultural and environmental viewpoints, and carries out the work adhering to the plan	produces an acceptable site-specific plan for a forest improvement site, takes into account silvicultural and environmental viewpoints, and carries out the work adhering to the plan	independently produces a site-specific plan for a forest improvement site, takes into account silvicultural and environmental viewpoints, and carries out the work adhering to the plan
Use and maintenance of machines	masters, occasionally under guidance, the operating technique and maintenance of a machine in compliance with one type of forest improvement work and its equipment	adequately masters the operating technique and maintenance of a machine in compliance with one type of forest improvement work and its equipment	thoroughly masters the operating technique and maintenance of a machine in compliance with one type of forest improvement work and its equipment
	operates a machine acceptably in easy conditions	operates a machine according to the principles of effectiveness and economy under normal conditions	operates a machine according to the principles of effectiveness and economy in a variety of conditions
Quality monitoring of work	adheres, under guidance, to quality management guidelines in his/her work, monitors the outcome of his/her work, and assesses and/or measures the quality of the work	adequately adheres to quality management guidelines in his/her work, monitors the outcome of his/her work, and assesses and/or measures the quality of the work	independently adheres to quality management guidelines in his/her work, monitors and develops the outcome of his/her work, and assesses and/or thoroughly measures the quality of the work
Silvicultural and environmental work Sustainable development	adheres, under guidance, to forestry and environmental management regulations, orders, and instructions in his/her work	adequately adheres to forestry and environmental management regulations, orders, and instructions in his/her work	independently adheres to forestry and environmental management regulations, orders, and instructions in his/her work
Cost and profitability calculations Initiative and entrepreneurship	knows, in part, the cost structure of the work, and estimates, under guidance, the quality and profitability of the work done by him/her	adequately knows the cost structure of the work, and estimates the quality and profitability of the work done by him/her	thoroughly knows the cost structure of the work, and realistically estimates the quality and profitability of the work done by him/her

Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated.	shows initiative, is largely diligent and motivated.	shows initiative, diligent, motivated, and appreciative of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Application of work methods	masters at least one work method acceptably and applies it in often repeated work situations	masters work methods acceptably and applies them in normal work situations	masters work methods thoroughly and applies them in different work situations
Use of IT systems	uses, under guidance, the IT applications controlling a machine's computer, and is able to use those functions related to data transmission	acceptably uses the IT applications controlling a machine's computer, and is able to use those functions related to data transmission	independently uses the IT applications controlling a machine's computer, and is able to use those functions related to data transmission
Utilisation of technology and information technology	makes use, under guidance, of the possible automation levels in the control of a machine in his/her work.	makes adequate use of the possible control automation levels of a machine in his/her work.	independently makes use of the possible control automation levels of a machine in his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 2
	The student or candidate		
Familiarity with and application of work instructions	is familiar with and, under guidance, applies the guidelines related to his/her work in practice.	is familiar with and adequately applies the guidelines related to his/her work in practice.	is familiar with and independently applies the guidelines related to his/her work in practice.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety, and ability to function	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions

	uses protection equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question	uses tidy and appropriate protective clothing and protective equipment intended to be worn during the work in question
	takes into account, in part, the hazards related to the work environment and work methods and machine operation, and makes the necessary reports on hazardous situations	identifies and takes into account, for the most part, the hazards related to the work environment and work methods and machine operation, and makes the necessary reports on hazardous situations	anticipates, identifies, and takes into account the hazards related to the work environment and work methods and machine operation, and makes the necessary reports on hazardous situations without delay
	operates a machine in a safe manner as regards work safety and partly in an ergonomically-correct manner.	operates a machine in a safe manner as regards work safety and for the most part in an ergonomically-correct manner.	operates a machine in a work-safe and ergonomically-correct manner.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by drawing up a work plan for a forest improvement work site, by carrying out forest improvement work of one type on a forest improvement work site, and by keeping a machine used by him/her in working order. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process, fully excluding cost and profitability calculations
- ◆ mastering the work method, equipment and material in its entirety
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.4.4 Forest machine operation

Vocational skills requirements

The student or candidate knows how

- ◆ to plan and prepare timber assortments or extract timber assortments mechanically
- ◆ to carry out the work related to the control and use of a forest machine’s IT control systems, operator-specific adjustments and often repeated work related to the maintenance of the working order of a machine on the work site
- ◆ to adhere to the work safety regulations, orders, and instructions in different work stages, and to take into account the environmental management regulations and other requirements when carrying out his/her work
- ◆ to carry out the foremost operation-time-based maintenance work, and to pinpoint and report faults needing to be remedied
- ◆ to install and operate the auxiliary equipment of a forest machine needed in the carrying out of the work
- ◆ to use the IT applications directing the functions of a machine and related to data transmission.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of mechanised wood harvesting	draws up, under guidance, a felling plan or an extraction plan for a wood harvesting site so that environmental management, mechanised wood harvesting, and the logistics chain of wood procurement have been mutually adapted	adequately draws up a felling plan or an extraction plan for a wood harvesting site so that environmental management, mechanised wood harvesting, and the logistics chain of wood procurement have been mutually adapted	independently draws up a felling plan or an extraction plan of quality for a wood harvesting site so that environmental management, mechanised wood harvesting, and the logistics chain of wood procurement have been thoroughly mutually adapted

Mechanised preparation of timber assortments or extraction of timber assortments	masters, at times under guidance, the operating technique of a machine used in preparing timber or of a forwarder, and the foremost operation-time-based maintenance jobs, and knows how to pinpoint faults and report the faults to be remedied	adequately masters the operating technique of a machine used in preparing timber or of a forwarder, and the foremost operation-time-based maintenance jobs, and knows how to pinpoint faults and report the faults to be remedied	independently masters the operating technique of a machine used in preparing timber or of a forwarder, and the foremost operation-time-based maintenance jobs, and knows how to pinpoint faults and report the faults to be remedied
	handles a forest machine acceptably in easy harvesting conditions	handles a forest machine in a controlled manner and in compliance with the principles of efficiency and economy in normal harvesting conditions	handles a forest machine faultlessly and in a controlled manner and in compliance with the principles of efficiency and economy in different harvesting conditions
	adheres, under guidance, to the quality management instructions pertaining to timber harvesting and measures the quality of his/her work	adheres acceptably to the quality management instructions pertaining to timber harvesting and measures the quality of his/her work	adheres independently to the quality management instructions pertaining to timber harvesting and thoroughly measures the quality of his/her work
Treatment of commercial forest stands Sustainable development	adheres, under guidance, to the regulations and instructions of the treatment of commercial forest stands in his/her work and prevents any potential environmental damage caused by mechanised operations; e.g. by fuel and oil spills	adequately adheres to the regulations and instructions of the treatment of commercial forest stands in his/her work and prevents any potential environmental damage caused by mechanised operations; e.g. by fuel and oil spills	independently adheres to the regulations and instructions of the treatment of commercial forest stands in his/her work and prevents any potential environmental damage caused by mechanised operations; e.g. by fuel and oil spills
Cost and profitability calculations	knows, in part, the cost structure of the work, and assesses, in part, the quality and profitability of his/her work	knows, for the most part, the cost structure of the work, and assesses the quality and profitability of his/her work	thoroughly knows the cost structure of the work, and realistically assesses the quality and profitability of his/her work
Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated.	shows initiative, is largely diligent and motivated.	shows initiative, diligent, motivated, and appreciative of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Use of equipment and auxiliary devices	operates, under guidance, auxiliary devices and equipment	adequately operates auxiliary devices and equipment	independently operates auxiliary devices and equipment
Application of work methods	masters at least one work method and applies it in often repeated work situations	masters the work methods adequately and applies them in normal work situations	thoroughly the masters work methods and applies them in different work situations
Use of IT systems	applies, under guidance, the IT applications controlling a forest machine's computer and the foremost functions, and those related to data transmission	adequately applies the IT applications controlling a forest machine's computer and the foremost functions, and those related to data transmission	independently applies the IT applications controlling a forest machine's computer and the foremost functions, and those related to data transmission
Utilisation of technology and information technology	uses a forest machine's control automation levels in his/her work under guidance.	acceptably uses a forest machine's control automation levels in his/her work.	uses a forest machine's control automation levels in his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Monitoring the quality of harvesting work	prepares and/or sorts, under guidance, the timber assortments in accordance with dimensional and quality requirements, and adheres to the foremost instructions pertaining to the storage of timber.	prepares and/or sorts the timber assortments adequately, in accordance with dimensional and quality requirements, and adheres to the foremost instructions pertaining to the storage of timber.	prepares and/or sorts the timber assortments independently in accordance with dimensional and quality requirements, and adheres precisely to the foremost instructions pertaining to the storage of timber.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety, and ability to function	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions

	uses protection equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question	uses tidy and appropriate protective clothing and protective equipment intended to be worn during the work in question
	takes into account the foremost hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up the necessary notifications pertaining to hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up the necessary notifications pertaining to hazardous situations	anticipates, identifies, and takes into account the hazardous elements related to the work environment and methods of work and to the use of forest machines, and draws up without delay the necessary notifications pertaining to hazardous situations
	operates a forest machine in a work-safe manner and, in part, in an ergonomically-correct manner	operates a forest machine in a work-safe manner and, for the most part, in an ergonomically-correct manner	operates a forest machine in a work-safe manner and in an ergonomically-correct manner
Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations and adapts, where necessary, his /her performance accordingly.	functions as an equal member of a team.

Ways of demonstrating vocational skills

The student or candidate plans and carries out the preparation of timber assortments or the extraction of timber assortments mechanically on a forestry work site. In addition, he/she carries out the work related to the control and use of the IT control systems of a machine, the operator-specific adjustments, and the often repeated work related to the maintenance of the working order of a machine. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process, excluding cost and profitability calculations
- ◆ mastering the work method, equipment, and material in its entirety
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.4.5 Operating energy-wood harvesters

Vocational skills requirements

The student or candidate knows how

- ◆ to prepare and extract energy wood when operating at least one machine on a forestry work site, the said machine belonging to the energy-wood procurement chain of equipment
- ◆ to carry out the often repeated work related to the maintenance of the working order of a machine
- ◆ to operate the auxiliary equipment of a forest machine needed in the carrying out of this work
- ◆ to use the IT applications directing the functions of a machine and related to data transmission
- ◆ to use the most common methods used in the harvesting of energy wood
- ◆ to tell about the economic, silvicultural, and environmental effects of wood harvesting
- ◆ to identify the demands imposed by the harvesting of energy wood on the separate stages of wood harvesting
- ◆ to perform the foremost maintenance work on a machine based on operating time
- ◆ to pinpoint faults and report them to be repaired.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning and implementation of work	draws up, under guidance, a site-specific plan for the harvesting of energy wood, and takes into account silvicultural and environmental viewpoints. Harvests energy wood, under guidance, according to the plan.	adequately draws up a site-specific plan for the harvesting of energy wood, and takes into account silvicultural and environmental viewpoints. Harvests energy wood according to the plan.	independently draws up a site-specific plan for the harvesting of energy wood, and takes into account silvicultural and environmental viewpoints. Harvests energy wood according to the plan.
Use and maintenance of machines	masters, under guidance at times, the operating technique and maintenance of an energy-wood harvesting machine and of its equipment	adequately masters the operating technique and maintenance of an energy-wood harvesting machine and its equipment	thoroughly masters the operating technique and maintenance of an energy-wood harvesting machine and its equipment
	operates a machine acceptably in easy conditions	operates a machine in compliance with the principles of economy and effectiveness in easy conditions	operates a machine in compliance with the principles of economy and effectiveness under normal conditions
Quality monitoring of work	adheres, under guidance, to quality management guidelines, monitors the outcome of his/her work, and assesses and/or measures the quality of the work	adequately adheres to the quality management guidelines in his/her work, monitors the outcome of his/her work, and assesses and/or measures the quality of the work	independently adheres to work quality management instructions in his/her work, monitors and develops his/her work outcome, assesses and/or measures the quality of his/her work thoroughly
Treatment of commercial forest stands Sustainable development	adheres, under guidance, to forestry and environmental management regulations, orders, and instructions in his/her work	adequately adheres to forestry and environmental management regulations, orders, and instructions in his/her work	independently adheres to forestry and environmental management regulations, orders, and instructions in his/her work
Cost and profitability calculations Initiative and entrepreneurship	knows, in part, the cost structure of the work, and estimates, under guidance, the quality and profitability of the work done by him/her	adequately knows the cost structure of the work, and estimates the quality and profitability of the work done by him/her	thoroughly knows the cost structure of the work, and realistically estimates the quality and profitability of the work done by him/her
Care and adherence to instructions	carries out the work and follows given instructions	carries out the work with care and follows given instructions	always does the work well and with care, and follows given instructions
Self-initiative and diligence	carries out routine jobs proactively and is largely motivated.	shows initiative, is largely diligent and motivated.	shows initiative, is diligent, motivated, and appreciative of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Management of work methods	masters at least one work method and applies it in often repeated work situations	masters the most common work methods acceptably and applies them in normal work situations	masters the work methods used and applies them in normal work situations
Use of IT systems	uses, under guidance, a machine's IT applications controlling a forest machine's computer and the foremost functions, and those related to data transmission	acceptably uses a machine's IT applications controlling a forest machine's computer and the foremost functions, and those related to data transmission	independently uses a machine's IT applications controlling a forest machine's computer and the foremost functions, and those related to data transmission
	makes use, under guidance, of the possible automation levels in the control of a machine in his/her work.	makes acceptable use of possible control automation levels of a machine in his/her work.	makes use of possible control automation levels of a machine in his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Harvesting of energy wood	knows the most common energy-wood harvesting methods and machinery. Identifies, under guidance, the silvicultural and environmental effects of harvesting, and the preconditions of energy-wood harvesting at different stages of forest development	knows the most common energy-wood harvesting methods and machinery. Adequately identifies the silvicultural and environmental effects of harvesting, and the preconditions of energy-wood harvesting at different stages of forest development	knows the state-of-the-art energy-wood harvesting methods and machinery. Reliably identifies the silvicultural and environmental effects of harvesting, and the preconditions of energy-wood harvesting at different stages of forest development
	knows, under guidance, the foremost energy units and bioenergy fractions and the most common dimensional and quality requirements of forest-based bioenergy.	adequately knows the foremost energy units, bioenergy fractions, and forms of use, and the most common dimensional and quality requirements of forest-based bioenergy.	knows the foremost energy units, bioenergy fractions, and forms of use, and the most common dimensional and quality requirements of forest-based bioenergy.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety, and ability to function	The student or candidate		
	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions	adheres to the foremost work safety regulations, orders, and instructions
	uses protection equipment intended to be worn during the work in question	uses appropriate protective clothing and protective equipment intended to be worn during the work in question	uses tidy and appropriate protective clothing and protective equipment intended to be worn during the work in question
Learning and problem solving	takes into account the foremost hazards related to the work environment and work methods, and machine operation, and makes the necessary reports on hazardous situations	identifies and takes into account, for the most part, the hazards related to the work environment and work methods and machine operation, and makes the necessary reports on hazardous situations	identifies and takes into account the hazards related to the work environment and work methods and machine operation, and makes the necessary reports on hazardous situations without delay
	operates a machine in a work-safe and, in part, ergonomically-correct manner.	operates a machine in a work-safe and, for the most part, ergonomically-correct manner.	operates a machine in a work-safe manner that is exemplary and in an ergonomically-correct manner.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and by carrying out energy-wood preparation and extraction mechanically on an energy-wood harvesting site. He/she carries out often repeated work related to the maintenance of the working order of a machine. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process, excluding cost and profitability calculations
- ◆ mastering the work method, equipment, and material in its entirety
- ◆ underpinning knowledge: dimensional and quality requirements
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, and learning and problem solving skills

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5 STUDY PROGRAMME OR SPECIALISATION IN FOREST-BASED ENERGY PRODUCTION, FOREST-BASED ENERGY PRODUCER

4.5.1 Harvesting and use of forest-based energy materials

Vocational skills requirements

The student or candidate knows how

- ◆ to carry out motor-manual energy-wood felling and to extract energy-wood to a storage point
- ◆ to carry out the work of at least one work stage of peat production using one production method
- ◆ to perform the water protection and fire safety measures required during peat production
- ◆ to determine the quality of bioenergy raw material supplied to a bioenergy production plant
- ◆ to carry out the assisting work related to the operation and maintenance of a small-scale bioenergy production plant and to the maintenance of the distribution network
- ◆ to maintain the basic operating condition of the machinery and plant and tools used by him/her
- ◆ to appropriately dispose of the materials used and the waste formed in his/her work
- ◆ to ensure the fire safety of his/her work
- ◆ to determine the general quality requirements of the products of wood-based energy and of peat.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of work	plans his/her work, under guidance, in accordance with the work instructions	plans his/her work in accordance with the work instructions	plans his/her work in accordance with the work instructions with due consideration for the prevailing conditions
Management of the entire work process, carrying out the work independently and responsibly	carries out the work as disconnected parts	carries out the work in the order set out in the work plan	carries out the work in the order set out in the work plan modifies the work order where necessary
	carries out the work frequently repeated and related to beginning and finishing of the work in accordance with instructions	carries out the daily work related to beginning and finishing of the work in accordance with instructions	carries out the work related to beginning and finishing of the work in accordance with instructions
Assessment of the work outcome and assessment and development of one's own work	produces, under guidance, work outcomes in compliance with the work instructions	produces work outcomes in compliance with the work instructions	produces work outcomes in compliance with the work instructions
	monitors the outcome of his/her work and finds in it good aspects and aspects to be developed	monitors the outcome of his/her work and the appropriateness of the solutions/decisions made by him/her	monitors the outcome of his/her work and provides the grounds of the solutions/decisions made by him/her makes the necessary changes in his/her work
	identifies, assesses, and demonstrates, under guidance, his/her pivotal vocational know-how and vocational strengths.	identifies, assesses, and demonstrates, systematically and logically, his/her pivotal vocational know-how and vocational strengths.	identifies, assesses, and demonstrates, systematically and logically, in an individual and creative manner, his/her pivotal vocational know-how and vocational strengths develop his/her pivotal vocational know-how and vocational strengths creatively, innovatively, and in a way that develops the working life.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment, and material	The student or candidate		
Ensuring the working order of the machines and devices used in energy-wood harvesting and peat production	attends, under guidance, to the basic working order of the machines and devices in accordance with the instructions	attends to the basic working order of the machines and devices in accordance with the instructions	maintains the basic working order of the machines and devices pre-emptively
	identifies the most common repair needs and reports on them immediately repairs machines under guidance	independently repairs those faults which can be easily remedied	independently repairs the most common faults
Motor-manual and mechanised preparation of energy wood	prepares energy wood motor-manually using a mechanised method, and does all this under guidance	prepares energy wood motor-manually using a mechanised method	prepares energy wood motor-manually using a mechanised method, and does all this promptly
		works with care	works with care and flexibly
Extraction of energy wood	extracts energy wood in easy conditions operating an extraction machine in an appropriate manner	extracts energy wood under normal conditions operating an extraction machine appropriate to the purpose and to the prevailing conditions	extracts energy wood under normal conditions operating an extraction machine in accordance with the principles of economics and efficiency
	operates a loader slowly	operates a loader slowly while applying some simultaneous functions	operates a loader in a controlled and effective manner while applying several simultaneous functions
Carrying out of peat production work	carries out peat production work using at least one method and applying the basic functions of the machines and devices, and knows how to apply the work stages of one production method	carries out peat production work using at least one method and applying the machines and devices in a manner appropriate to the work in question and the prevailing conditions, and applies the work stages of commonly used production methods	carries out peat production work using at least one method and applying the machines and devices in accordance with the principles of economics and efficiency, and applies the work stages of commonly used production methods the foremost factors of which are affected by the choice of the production method
		works according to a plan	works according to a plan and with care

Ensures the fire safety of his/her work	monitors the weather conditions and potential fires in the production area while work is on-going. Reports in a clear manner on observations related to fire safety.	monitors the weather conditions and potential fires in the production area while work is on-going. Asks for advice when the conditions change.	monitors the weather conditions and potential fires in the production area while work is on-going. Makes, as necessary, changes in his/her work or order of doing things.
	extinguishes, as necessary, any potential fires and tops up the tanks of extinguishing water	independently extinguishes, as necessary, any potential fires and tops up the tanks of extinguishing water	independently extinguishes, as necessary, any potential fires and tops up the tanks of extinguishing water, and guides other extinguishing work self-reliantly
Adherence to water protection regulations of a peat production site	carries out the most common checking and maintenance work on the water cleaning system related to peat production work	carries out the most common checking and maintenance work on the water cleaning systems related to peat production work taking into account the working principle of peat production water cleaning system	carries out promptly the most common checking and maintenance work on the water cleaning systems related to peat production work taking into account the performance of the peat production area's water cleaning system
	carries out the work so that the work he/she does will not repeatedly impair the performance of the peat production area's water cleaning system	carries out the work so that the work he/she does hardly impairs the performance of the peat production area's water cleaning system	carries out the work so that the work he/she does not impair the performance of the peat production area's water cleaning system
Operation and servicing of the bioenergy production plant	carries out the auxiliary work related to the operation and maintenance of a small-scale bioenergy production plant applying the most common work methods	carries out the most common work related to the operation and maintenance of a small-scale bioenergy production plant applying the most common work methods	carries out the most common work related to the operation and maintenance of a small-scale bioenergy production plant applying the most appropriate work method
	uses the basic tools of the production plant after receiving initial guidance	uses the basic tools of the production plant in an appropriate manner	selects the necessary tools and uses them seamlessly and faultlessly and self-reliantly
Correct choice and use of materials, accessories, and materials	chooses and uses, under guidance, the most common materials and accessories needed in maintenance	chooses and uses the most common materials and accessories needed in maintenance	chooses and uses, independently and promptly, the most common materials and accessories needed in maintenance
	carries out the agreed topping-ups and checks	carries out the agreed topping-ups and checks	carries out the agreed topping-ups and checks
Making use of technology	uses the technological applications necessary in his/her work	uses pivotal technological applications in his/her work	uses technological applications in his/her work and makes use of the latest technology

Dealing with waste	sorts the waste formed in the course of his/her work and the material to be recycled, and disposes of these to appropriate places or to be processed further
Taking fire safety into account in peat production work	knows how to use, where necessary, initial extinguishing equipment and various extinguishing methods
	knows how to raise an alarm if necessary.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Use of wood and other wood-energy products as sources of energy	takes, under guidance, the foremost renewable sources of energy and their energy content into account in his/her work	takes the renewable sources of energy and their energy content into account in his/her work	independently takes the significance of renewable sources of energy and their energy content for energy production into account in his/her work
	takes the foremost energy-wood raw material forms into account in his/her work	takes the most important energy-wood raw material forms and converted products into account in his/her work	takes the various energy-wood raw material forms and converted products into account in his/her work
Cost-efficient and successful operation	performs, under guidance, comparison calculations focusing on the energy contents of renewable energy forms	performs, simple comparison calculations focusing on the energy contents of renewable energy forms	performs comparison calculations focusing on the energy contents and efficiency of the foremost renewable energy forms
Identification of the preconditions for peat production	identifies the essential preconditions for establishing a peat production site	identifies the foremost production preconditions for peat production	identifies the foremost production preconditions for peat production and the foremost ecological impacts of the use of peat
Determining the structure and operation of the machinery and devices used in the harvest of energy wood and peat production	determines the machinery and devices in general use in the harvesting of energy wood and in peat production, and their applications	determines the peat-production machinery and devices in general use in peat production and the machinery and devices in general use in the harvesting of energy wood, and their application targets	determines the peat-production machinery and devices in general use in peat production and the machinery and devices in general use in the harvesting of energy wood, and their application targets
	determines, under guidance, their working principles, and identifies and names the machine's most common gauges and warning systems, and asks for help, as necessary, in interpreting these	determines their working principles, and reacts in accordance with instructions to a machine's most common gauges and warning signs and sounds	determines their working principles and pivotal properties, and reacts in accordance with instructions to a machine's most common warning signs and sounds

Identification of peat products	identifies the most common peat products and their foremost quality factors	identifies the regional peat products and knows their foremost applications	identifies the regional peat products and knows their foremost properties and applications
		interprets which peat batch does not fulfil the quality requirements related particularly to moisture	interprets which peat batch does not fulfil the quality requirements and takes this into account in his/her work
Identification of short-rotation plants taking into account their habitat requirements	identifies the region's most important short-rotation plants and knows their foremost habitats	identifies the most common short-rotation plants and knows their habitat requirements	identifies the most common short-rotation plants and knows their habitat requirements
Conversion of short-rotation plants	takes into account in his/her work the most common local use and conversion alternatives	takes into account in his/her work the most common use and conversion alternatives, and main stages in the conversion process of one such conversion process	takes into account in his/her work the most common use and conversion alternatives, and the main stages of their conversion processes
Determining the structure and operation of a bioenergy production plant	identifies the most common boiler types when using solid fuels	identifies the most common boiler types when using solid fuels and describes their working principles	identifies the most common boiler types when using solid fuels and describes their working principles
			determines the working principle of a heat-distribution network
		takes into account the principle of the combustion event and the significance of the moisture content of the fuel	takes into account the principle of the combustion event and heat exchange, and the significance of the moisture content for fuel combustion
		takes into account how combustion is controlled at a heating plant	takes into account how combustion is controlled at a heating plant and how adjustments affect the operation of the heating plant
Acquiring of vocational knowledge	acquires and applies the knowledge required for demonstrating his/her pivotal vocational know-how and vocational strengths	acquires and applies the reliable and pivotal knowledge required for demonstrating his/her pivotal vocational know-how and vocational strengths	acquires and applies the reliable and pivotal knowledge required for demonstrating his/her pivotal vocational know-how and vocational strengths, and applies it critically in different ways

	seeks, under guidance, the knowledge needed in his/her work	independently seeks the knowledge needed in his/her work	seeks and independently applies the knowledge needed in his/her work
		applies knowledge in often repeated situations	endeavours to achieve constant improvement
Health, safety and ability to function	takes the foremost fire-safety factors into account in his/her work	takes the foremost fire-safety factors into account in his/her work	pre-empts the foremost fire-safety factors associated with his/her work
	takes into account the immediate effects of his/her own operation on fire safety	knows the immediate effects of his/her own operation on fire safety	knows the effects of his/her own operation on fire safety
	carries out his/her work so that it does not constitute a hazard to anyone on the work site		
	masters the basics of ergonomics		
	attends to the general tidiness of the work site		
	knows how to raise an alarm for help in emergency situations		
	knows how to administer first aid.		

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Interaction and cooperation	expresses him-/herself intelligibly and receives given instructions	expresses him-/herself intelligibly and adheres to given instructions	expresses him-/herself clearly in various interaction situations, and
			adheres precisely to given instructions and their grounds, and
			develop his/her skills in cooperation
Health, safety and ability to function	takes into account the health and safety risks of the work by carrying out the work so that it does not constitute a hazard to anyone on the work site.		

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by carrying out harvesting of the energy wood, the work involved in one stage of peat production, and the work related to operation and maintenance of a heating plant. In addition, the student or candidate carries out the work required in beginning and completing the work, and he/she sees to the basic operating condition and work safety of the machinery, devices, and tools.

A skills demonstration is to comprise at least

- ♦ mastering the work process in its entirety
- ♦ mastering the work methods, equipment, and material excluding extraction of energy wood and the competence related to the production area's water cleaning and waste disposal
- ♦ underpinning knowledge: competence related to fire safety
- ♦ key competences for lifelong learning: competence related to health, safety, and the ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5.2 Harvesting of energy wood

Vocational skills requirements

The student or candidate knows how

- ♦ to draw up a harvesting plan in compliance with the silvicultural recommendations for an energy-wood harvesting site
- ♦ to fell and extract energy wood from thinning stands using machinery and devices and their auxiliary equipment and IT applications commonly used for the purpose
- ♦ to store energy wood for further transportation or further processing
- ♦ to take into account the regulations, orders, and instructions related to the harvesting of energy wood
- ♦ to see to the working order of the machinery, devices, and tools used by him/her, and to carry out the associated minor regular maintenance
- ♦ to attend to the transfer of the machinery from site to site
- ♦ to calculate costs of the harvesting of energy wood
- ♦ to look after the harvesting company's customer relations
- ♦ to carry out the work as part of the energy raw material procurement chain while at the same time taking into account the regulations, orders, and instructions concerning the harvesting of energy wood and the requirements imposed by energy-production plants on the harvesting
- ♦ to take into account the requirements of health and safety, and the ability to function when carrying out the harvesting of energy wood

- ♦ to see to his/her rights and obligations, and the realisation of the principles of sustainable development in his/her work
- ♦ to emphasise his/her vocational competence by completing the class C driving licence test.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of the harvesting operation	plans one work stage in compliance with the work site instructions	plans the harvesting operation in compliance with the work site instructions and chooses a harvest alternative suitable for the work site	plans the harvesting operation in compliance with the work site instructions with due consideration for the available equipment and chooses the harvesting alternative that is the most suitable and most profitable for the work site
		makes use of electronic data transmission in the planning	makes use of electronic data transmission in the planning
	sets, under guidance, realistic cost targets for his/her work	sets feasible cost targets for routine work	sets feasible cost targets for his/her work
	plans, under guidance, the harvesting of industrial timber	plans the harvesting of industrial timber	independently plans the harvesting of industrial timber
Harvesting of energy wood	carries out the work in accordance with the harvesting plan	carries out the work in accordance with the harvesting plan	carries out the work in accordance with the harvesting plan
			modifies the work order where necessary
	operates, for the most part, self-reliantly and diligently	operates self-reliantly and diligently	operates self-reliantly and diligently, and strives to develop his/her work

	carries out routine work independently and in accordance with the objectives	carries out routine work independently, responsibly, and in accordance with the objectives	carries out his/her work independently, responsibly, and in accordance with the objectives from the beginning to the end
Management of commercial stands	manages commercial stands in accordance with the plans	manages commercial stands in accordance with the plan and does so promptly	manages commercial stands in accordance with the plan and does so promptly, and develops his/her work within the framework of forest biodiversity and the legislation
Assessment and development of the outcome of one's own work	works in such a way that more practice is required before the outcome complies with the harvesting instructions	works in such a way that only occasional factors impairing the outcome occur	works in such a way that the outcome complies with the harvesting instructions
	works in such a way that factors impairing the quality of energy wood occur in amounts not exceeding the maximum acceptable in the monitoring of quality	works in such a way that some factors impairing the quality of energy wood occur	works in such a way that no factors impairing the quality of energy wood occur
	assesses the effects of his/her work on the quality of energy wood	assesses the effects of his/her work on the quality requirements of energy wood correctly for the most part	assesses the fulfilment of the quality requirements of his/her work develops the productivity and quality of his/her work realistically assesses the level of his/her own knowledge and skills in comparison to that of a professional level,
Cost calculation of the harvesting of energy wood	calculates the costs of one work stage using the given machine hour costs	takes into account the foremost principles of tendering and contractual practices	takes into account the principles of tendering and contractual practices
	takes into account, under guidance, the foremost factors in the harvesting of energy wood impacting on the success of the company	attends to the harvesting company's foremost customer relations calculates the harvesting costs of a marked stand	attends to the harvesting company's customer relations calculates the harvesting costs of a marked stand and determines their share of all of the procurement costs of energy wood
	assesses, under guidance, the significance of work and entrepreneurship in the harvesting of energy wood	assesses the significance of work and entrepreneurship in the harvesting of energy wood	realistically assesses the significance of work and entrepreneurship in the harvesting of energy wood

	assesses, under guidance, his/her possibilities to function as an entrepreneur in the harvesting of energy wood	realistically assesses his/her possibilities to function as an entrepreneur in the harvesting of energy wood	realistically assesses his/her possibilities to function as an entrepreneur in the harvesting of energy wood and knows how to set development targets for his/her know-how
Attending to customer relations	reports on and demonstrates the results of his/her work briefly	reports on and demonstrates the results of his/her work logically and clearly	reports on, demonstrates, and provides grounds for the results of his/her work logically and clearly
Measuring energy wood	measures, under guidance, energy wood in accordance with the currently valid recommendations and instructions.	measures energy wood in accordance with the currently valid recommendations and instructions.	measures energy wood promptly and in accordance with the currently valid recommendations and instructions.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Mechanised harvesting of energy wood	equips and adjusts the foremost functions of machinery and devices to enable their controlled operation	equips and adjusts the functions of a machine to enable controlled operation	equips and adjusts the functions of a machine to enable flexible operation
	harvests energy wood in accordance with quality and harvesting instructions in easy locations using a mechanised method appropriate to the site	harvests energy wood in accordance with quality and harvesting instructions using a mechanised method appropriate to the site _{<0}	harvests energy wood in accordance with quality and harvesting instructions using a mechanised method appropriate to the site
	handles a harvesting machine in a controlled manner	handles a harvesting machine in a controlled manner	handles a harvesting machine in a faultless manner
Maintaining the working order of machinery and devices and carrying out of repairs	attends to a machine's basic working order and the main components of machines generally used in harvesting energy wood	attends to the working order of machines and devices and assesses the urgency of possible repair needs	maintains the working order of machines and devices and assesses the urgency of possible repair needs and takes into account the effects of working order on the operating, maintenance, and troubleshooting of the machines and devices
	selects, under guidance, the materials, accessories, and tools needed in his/her work, and uses them safely	selects the materials, accessories, and tools needed in his/her work, and uses them safely	reserves in advance the materials, accessories, and tools needed in his/her work, and uses them safely

	identifies and pinpoints a machine's most common functional faults and repairs them under guidance	identifies and repairs the most common functional faults needs guidance in systematic troubleshooting	identifies and repairs the most common functional faults proceeds systematically in troubleshooting
	assists in regular maintenance	carries out minor regular maintenance on a machine	anticipates and carries out minor regular maintenance on a machine
	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)
Storage of energy wood	forms storage formations suitable for further transportation	forms storage formations suitable for further transportation	forms storage formations suitable for further transportation
	some factors impairing product quality apparent in storage formation	stores energy wood in a manner enabling its efficient further processing	stores energy wood in a manner enabling its efficient further processing
		stores energy wood in a manner that does not impair its quality during storage	stores energy wood in piles that are high enough and also takes into account the other quality factors so that the quality can improve during storage
Machine transfers	makes loads and ties loads, under guidance, in compliance with Tieliikennelaki (Road Traffic Act) and the associated decree	makes loads, ties loads, and lorry equipping in compliance with Tieliikennelaki (Road Traffic Act) and the associated decree	makes loads, ties loads, and lorry equipping in compliance with Tieliikennelaki (Road Traffic Act) and the associated decree, and transfers the machine to the next harvesting site
Making use of technology	uses the essential technological applications in his/her work.	uses the foremost technological applications in his/her work.	uses technological applications in his/her work and makes use of new technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Further processing of energy wood and utilisation of logistics	determines the most common machines used in the further processing of energy wood	determines the most common machines used in the further processing of energy wood, and assesses the special requirements these impose on his/her work	determines the most common machines used in the further processing of energy wood, and assesses the special requirements these impose on the harvesting of energy wood
	takes into account the most common transportation and end-use alternatives		sets the order of superiority of the most common processing alternatives and further transportation alternatives
Adherence to silvicultural recommendations	takes into account the foremost forest treatment instructions contained in the silvicultural recommendations in the harvesting of energy wood	assesses the realisation of the silvicultural recommendations in the harvesting of energy wood	compares the forest treatment alternatives in compliance with the silvicultural recommendations in the harvesting of energy wood, and knows the impacts for the future stand development of the measures carried out in the harvesting of energy wood
Adherence to environmental protection instructions and regulations	functions in accordance with the environmental protection instructions of the workplace	functions in accordance with the environmental protection instructions of the workplace	functions in accordance with the environmental protection instructions of the workplace
		identifies the environmental risks of the workplace	identifies the foremost environmental risks of the workplace and knows how they can be prevented from materialising
		carries out his/her work usually in accordance with the nature management recommendations for commercial forest stands	always carries out his/her work in accordance with the nature management recommendations for commercial forest stands
Use of resources	functions, under guidance, cost-effectively taking into account time and other available resources	functions cost-effectively and successfully taking into account time and other available resources	demonstrates self-initiative in functions and takes into account time and other available resources cost-effectively, fostering the profitability of the company or organisation

Attending to customer relations	functions, under guidance, in his/her work so that he/she promotes customer relations	functions in his/her work so that he/she promotes lasting customer relations	functions in his/her work so that he/she promotes uninterrupted operation and lasting client connections
Recognition of the demands imposed by an energy-generation plant on harvesting	takes into account the foremost effects of one work stage in energy-wood harvesting on the conversion value of the raw material	takes into account how the harvesting of energy wood fits in with the energy-generation plant's raw material procurement chain	takes into account how the harvesting of energy wood fits in with the energy-generation plant's raw material procurement chain
		knows the foremost effects of the harvesting of energy wood on the conversion value of the raw material	knows the foremost effects of the procurement chain's various stages on the conversion value of the raw material
Acquisition and use of information	seeks information related to his/her work and presents it intelligibly orally or in writing	seeks and makes use of information related to his/her work	seeks and makes use of information related to his/her work
	acquires, under guidance, international information on the harvesting or use of energy wood	acquires, under guidance, international information on the harvesting or use of energy wood and on the use of bioenergy or the associated devices	acquires, under guidance, international information on the harvesting of energy wood, on the use of bioenergy, and the associated devices, and makes use of the information in his/her work
	acquires, under guidance, information on the need for developing the products and services.	acquires information on the need for developing the products and services.	acquires information on the need for developing the products and services, and knows how to make use of the information for developing his/her workplace.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety and ability to function	The student or candidate		
	adheres to the foremost important work safety regulations, orders, and instructions	adheres to the foremost important work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions
	uses protection equipment intended for the work in question	uses appropriate protective clothing and the protective equipment intended for the work in question	uses tidy and appropriate protective clothing and the protective equipment intended for the work in question

takes into account the foremost hazardous elements related to the workplace environment and methods of work and to the use of forest machines, and makes the required reports on hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the workplace environment and methods of work and to the use of forest machines, and makes the required reports on hazardous situations	anticipates, identifies and takes into account the hazardous elements related to the workplace environment and methods of work and to the use of forest machines, and makes the required reports on hazardous situations without delay
operates forest machines in a work-safe manner and, in part, in an ergonomic manner	operates forest machines in a work-safe manner and in an ergonomic manner	operates forest machines in a work-safe manner and in an ergonomic manner
adopts a positive attitude towards safe operation and avoids risks in his/her work and adheres to pivotal legislation and instructions related to occupational health and work safety in the field of forestry	independently bears responsibility for the safety of his/her operation	independently develops the safety of his/her operation
	independently functions with the aim of maintaining healthy ways of life and the ability to function and work	independently develops different ways of maintaining and promoting healthy ways of life and the ability to function and work takes into account a culture of safety and does so also when not at work
takes into account the foremost safety viewpoints and health factors in the planning of his/her work, and maintains a safe and ergonomic workplace environment in familiar situations	takes into account the safety viewpoints and health factors in the planning of his/her work, and maintains a safe and ergonomic workplace environment	independently takes into account the safety viewpoints and health factors in the planning of his/her work, and knows how to apply what he/she has learnt even in unexpected situations
adheres to given instructions and does not cause hazardous situation by his/her operation, and acts correctly in accident, hazardous, and threatening situations		
uses the protective equipment, tools, and methods of work in a safe manner in compliance with instructions	assesses the suitability of protective equipment, tools and methods of work for the carrying out of the work in question	ensure the safety of tools and materials before they are used, and withdraws faulty tools from use and takes them to be repaired
makes use of technical safety systems and takes them into account, under guidance, in his/her work	independently takes technical safety systems into account in his/her work	

	takes into account his/her essential obligations related to work safety and knows the foremost regulations pertaining to forestry	takes into account his/her obligations related to work safety and knows the foremost regulations pertaining to forestry	takes into account his/her obligations related to work safety and knows the foremost regulations pertaining to forestry
Interaction and cooperation	functions as a member of the team in familiar interaction situations	functions as a member of the team in familiar interaction situations, and modifies, where necessary, his/her own behaviour	functions as an equal member of the team paying due attention to the opinions of others
	functions in often repeated customer situations	functions in customer situations in such a manner that he/she reinforces the preservation of customer relations	functions in customer situations in such a manner that he/she reinforces the preservation of customer relations and promotes the formation of new customer relations
Learning and problem solving	solves often repeated problems	solves the most common problems and assesses the reasons leading to the problems	solves the problems avoids the reoccurrence of problems by modifying his/her actions
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	generally applies basic knowledge in his/her work with a qualitative and successful outcome	applies basic knowledge in his/her work with a qualitative and successful outcome
Vocational ethics	adheres to the pivotal regulations of workers' rights, benefits, and obligations	adheres to the rules of the workplace community and the pivotal regulations of the workers' rights, benefits, and obligations	adheres to the rules of the workplace community and agreed action models and the pivotal regulations of the workers' rights, benefits, and obligations
	implements the principles of sustainable development of his/her field of work.	adopts a positive attitude to the realisation of the principles of sustainable development of his/her field of work.	promotes the realisation of the principles of sustainable development of his/her field of work.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by drawing up a harvesting plan for an energy-wood harvesting site. The student or candidate harvests, stores, and prices energy wood on an energy-wood harvesting site. In addition, the student or candidate services and maintains the machines and devices.

A skills demonstration is to comprise at least

- ◆ mastering the work process, excluding entrepreneurship skills
- ◆ mastering the work methods, equipment and material: regular maintenance and repairs, and machine transfers
- ◆ underpinning knowledge: competence related to environmental regulations
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, vocational ethics, learning and problem solving, and interaction and cooperation skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5.3 Peat production and storage

Vocational skills requirements

The student or candidate knows how

- ◆ to prepare a production area for peat production
- ◆ to carry out the annual maintenance of a production area and maintenance of the water cleaning system, and to prepare the production area for post-production use
- ◆ to plan and to carry out the work on a peat production site and the peat storage when using machinery and devices generally used for these purposes and their auxiliary equipment and IT applications
- ◆ to maintain the machinery and devices used by him/her, and to carry out minor regular maintenance and repairs
- ◆ to transport the peat-production machinery and devices to the production area and to the end user of the peat
- ◆ to determine the amount of peat when applying stockpile measurement
- ◆ to calculate the costs of the work involved in peat production, to attend to the peat-extraction company's customer relations, and to get orders for the company
- ◆ to carry out the work as part of the energy raw material procurement chain while taking into account the regulations, orders, and instructions applying to peat production and peat-production areas
- ◆ to ensure the fire safety of the peat-production area
- ◆ to fulfil in his/her work the requirements imposed on the peat production of an energy-generation plant.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of peat production work	plans routine work involved in peat production and storage in accordance with given instructions	plans the work involved in peat production and storage. Planning includes correct order and timing of work stages.	plans the work involved in peat production and storage in accordance with given instructions
	sets, under guidance, realistic cost targets for his/her work	takes into account the effects of changes in weather factors on the realisation of the plan	takes into account the effects of changes in weather factors on the realisation of the plan
		sets realistic cost targets for routine work	determines and provides grounds for which machines and devices can be profitably used for peat production on a production area
Management of the entire process and independent and responsible work	carries out the work in an order in compliance with the plan	carries out the work in compliance with the plan	carries out the work in compliance with the plan and takes into account the entire process of peat production
	works, for the most part, on their own initiative	modifies the work order where necessary	works on their own initiative and in a manner that develops his/her work
		works on their own initiative	
carries out routine work independently and in accordance with the objectives	carries out routine work independently, responsibly, and in accordance with the objectives	carries out his/her work independently, responsibly, and in accordance with the objectives, from the beginning to the end	

Assessment and development of the outcome of one's own work	achieves, under guidance, a work outcome in compliance with the quality instructions	achieves, in most cases, a work outcome in compliance with the quality instructions	always achieves a work outcome in compliance with the quality instructions
	carries out his/her work so that it enables the continuation of production	carries out his/her work so that it enables the continuation of production and calculates the amount of peat produced	carries out his/her work so that it enables the efficient and quality continuation of production and calculates the amount of peat produced
	and calculates the amount of peat produced after having received initial guidance		
	determines the quality of the peat under guidance	determines the quality of the peat produced by applying his senses	determines the quality of the peat produced by applying his senses and relates this to the production area's average output. Times the following stages of production based on the result.
	finds good and to-be-developed aspects in his/her plan	assesses his own plan and work. Assesses the effects of his/her work on the quality of the peat.	assesses his own plan and work and assesses the effects of his/her work on the quality of the peat, production output, and use
Cost-efficient and successful operation	determines the necessary work hours needed for peat production	determines the necessary work hours needed for peat production and calculates the unit costs using given machine-hour rates	determines the unit costs for peat production work and compares them to average costs
	calculates unit costs for peat production work under guidance	interprets, under guidance, the company's foremost economic indicators	interprets the company's foremost economic indicators and knows how to plan his/her operation based on them
	carries out the work taking into account the foremost success factors of the peat-production company	attends to the company's foremost customer relations, and knows the principles pertaining to bidding and contractual practices	gets jobs for the company and maintains the company's network of customers, and carries out / assigns bids and contracts related to the customers' assignments
	assesses, under guidance, the significance of working and entrepreneurship in peat production	assesses the significance of working and entrepreneurship in peat production	realistically assesses the significance of working and entrepreneurship in peat production

	assesses, under guidance, his/her possibilities to become an entrepreneur in the field of peat production.	realistically assesses his/her possibilities to become an entrepreneur in the field of peat production.	realistically assesses his/her possibilities to become an entrepreneur in the field of peat production and sets development targets for his/her know-how.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Carrying out mechanised peat production	equips and adjusts, after having received initial guidance, the pivotal functions of machines and devices to be appropriate to the work in question. Prepares the peat production area for production and stores the peat.	equips and adjusts the pivotal functions of machines and devices to be appropriate to the work in question to enable the production of the peat in compliance with the quality instruction	equips and adjusts the pivotal functions of machines and devices to be appropriate to the work and conditions in question to enable the economic and efficient production of the peat in compliance with the quality instruction
	carries out peat production using one production method and the basic functions of machinery and devices. Operates the machines and devices in a controlled way, but operation is still formal (unimaginative)	carries out the peat production applying at least one production method and operating machines and devices faultlessly and in a way appropriate for the work in question	carries out the peat production applying at least one production method and operating machines and devices faultlessly and efficiently
Preparation, reconditioning, and post-production use of peat production areas	carries out the easiest preparatory work on a peat production area, the reconditioning work and water cleaning system's maintenance work during production, and the work related to the site's post-production use in compliance with the production area's environmental permit	carries out the pivotal preparatory work on a peat production area, the reconditioning work and water cleaning system's maintenance work during production, and the work related to the site's post-production use in compliance with the production area's environmental permit	carries out the pivotal preparatory work on a peat production area, the reconditioning work and water cleaning system's maintenance work during production, and the work related to the site's post-production use in compliance with the production area's environmental permit and in such a manner as to enable efficient and full-scale production

Maintaining the working order of machinery and devices	attends to the working order of machinery and devices	maintains the working order of machinery and devices and assesses the urgency of possible repairs	maintains the working order of machinery and devices and assesses the urgency of possible repairs
	selects, under guidance, the materials, accessories, and tools needed in his/her work, and uses them safely	selects the materials, accessories, and tools needed in his/her work, and uses them safely	reserves in advance the materials, accessories, and tools needed in his/her work, and uses them safely
Servicing and repair of machines	identifies and pinpoints the most common functional disorders and faults, and remedies them under guidance	identifies and repairs the most common functional faults seeks out faults, under guidance, and does so systematically	identifies and repairs the most common functional faults. Proceeds systematically in troubleshooting.
	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies hazardous maintenance and repair work, which must not be done unassisted
	assists in regular maintenance	carries out minor regular maintenance on a machine in accordance with instructions	anticipates and carries out minor regular maintenance on a machine in accordance with instructions
Storage of peat	forms storage formations suitable for further transportation	stores peat products so that their further transportation and efficient further processing are enabled	stores peat products so that their efficient further transportation and efficient further processing are enabled
	forms storage formations having characteristics which reduce the quality of the product	forms storage formations having characteristics which do not essentially reduce the quality of the product	stores peat products so that their quality does not worsen during storage stores peat products so that the peat does not catch fire during storage for reasons attributable to him/her
Carrying out of road transportation	prepares, under guidance, road transportation in accordance with Tieliikennelaki (Road Transportation Act) and the associated decree	prepares, under guidance, road transportation in accordance with Tieliikennelaki (Road Transportation Act) and the associated decree and transfer/transports a peat tractor and a load/device by road under normal conditions	prepares road transportation in accordance with Tieliikennelaki (Road Transportation Act) and the associated decree and transfer/transports a peat tractor and a load/device by road under different conditions
			fulfils the basic vocational competence level of lorry drivers
Making use of technology	uses automation and technology applications essential in his/her work.	uses the pivotal automation and technology applications in his/her work.	uses automation and technology applications in his/her work and makes use of new technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Taking into account the structure and operation of machinery and devices	takes into account the main components and the working principles of the machinery and devices commonly used in his/her work	takes into account in his/her work the basic structure and the central properties and working principles of the machinery and devices commonly used in the preparation of production sites, in peat production, and in peat storage	takes into account in his/her work the basic structure and the central properties and working principles of the machinery and devices commonly used in the preparation of production sites, in peat production, and in peat storage so that he/she is able to take into account their effects on the operation, maintenance, and troubleshooting of the machinery and devices
Measuring of peat in stockpiles	measures peat in stockpiles under guidance	measures peat in stockpiles in accordance with given instructions	measures peat in stockpiles promptly in accordance with given instructions
Ensuring fire safety	acts in accordance with the work site's fire safety instructions in regard to matters of foremost fire safety importance	generally acts in accordance with the work site's fire safety instructions	acts in accordance with the work site's fire safety instructions
		makes use of the work site's fire prevention plan	makes use of and applies the work site's fire prevention plan
	assesses the foremost impacts of his/her work on the fire safety of the production area	assesses the foremost factors impacting on the fire safety of the production area	assesses the foremost fire safety risks of the production area and knows how to manage them
Assessment of the use of peat	assesses the foremost alternatives for the use of peat	assesses the local alternatives for the transportation and use of peat	assesses the regional alternatives for the transportation and use of peat
Adherence to environmental regulations	identifies the most significant environmental risks associated with the preparation of a peat production area, peat production, and peat storage, and acts in accordance with the environmental regulations		
Acquisition and use of information	acquires, under guidance, international information about peat production, the use of peat energy, and the associated machinery and devices	acquires international information about peat production, the use of peat energy, and the associated machinery and devices	acquires international information about peat production, the use of peat energy, and the associated machinery and devices
	acquires, under guidance, information about the need for developing products and services.	acquires information about the need for developing products and services.	acquires information about the need for developing products and services, and knows how to make use of the information for developing his/her workplace.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Health, safety and ability to function	The student or candidate		
	adheres to the foremost important work safety regulations, orders, and instructions	adheres to the foremost important work safety regulations, orders, and instructions	adheres to the work safety regulations, orders, and instructions
	uses protection equipment appropriate for the work in question	uses appropriate protective clothing and the protective intended for the work in question	uses tidy and appropriate protective clothing and the protective equipment intended for the work in question
	takes into account the foremost hazardous elements related to the workplace environment and methods of work and to the use of forest machines, and makes the required reports on hazardous situations	identifies and takes into account, for the most part, the hazardous elements related to the workplace environment and methods of work and to the use of forest machines, and makes the required reports on hazardous situations	anticipates, identifies and takes into account the hazardous elements related to the workplace environment and methods of work and to the use of forest machines, and makes the required reports on hazardous situations without delay
	operates forest machines in a work-safe manner and, in part, in an ergonomic manner	operates forest machines in a work-safe manner and, for the most part, in an ergonomic manner	operates forest machines in a work-safe manner and in an ergonomic manner
	functions, under guidance, in a safe manner and avoids risks in his/her work, and adheres to the pivotal legislation and instructions related to occupational health and work safety	bears independently responsibility for the safety of his/her operation	develops independently the safety of his/her operation
		functions independently with the aim of maintaining healthy ways of life and the ability to function and work	independently knows how to develop versatile ways of maintaining and promoting healthy ways of life and the ability to function and work
	takes into account the foremost safety viewpoints and health factors in the planning of his/her work, and maintains a safe and ergonomic workplace environment in familiar situations	takes into account the safety viewpoints and health factors in the planning of his/her work, and maintains a safe and ergonomic workplace environment	independently takes into account the safety viewpoints and health factors in the planning of his/her work, and knows how to apply what he/she has learned even in unexpected situations

	adheres to given instructions and does not cause hazardous situations and acts correctly in accident situations, hazardous situations and threatening situations	adheres to given instructions and does not cause hazardous situations and acts correctly in accident situations, hazardous situations and threatening situations	adheres to given instructions and does not cause hazardous situations and acts correctly in accident situations, hazardous situations and threatening situations
	uses the protective equipment, tools, and methods of work in a safe manner in compliance with instructions	assesses the suitability of protective equipment, tools and methods of work for the carrying out of the work in question	assesses the safety of tools and materials before using them, withdraws faulty tools and takes them to be repaired, and independently takes into account technical safety systems in his/her work
	makes use of technical security systems and takes them into account, under guidance, in his/her work	independently takes technical safety systems into account in his/her work	
	takes into account his/her essential obligations related to work safety and knows the foremost regulations pertaining to forestry	takes into account his/her obligations related to work safety and knows the foremost regulations pertaining to forestry	takes into account his/her obligations related to work safety and knows the foremost regulations pertaining to forestry
Learning and problem solving	solves the most common problems	solves the most common problems and assesses the reasons leading to the problems	solves the most common problems
	applies, under guidance, basic knowledge in his/her work with a qualitative and successful outcome	generally applies basic knowledge in his/her work with a qualitative and successful outcome	avoids the reoccurrence of problems by modifying his/her actions applies basic knowledge in his/her work with a qualitative and successful outcome
Interaction and cooperation	functions as a member of the team in familiar interaction situations	functions as a member of the team in familiar interaction situations, and modifies, where necessary, his/her own behaviour	functions as an equal member of the team and takes the opinions of others into account
			processes the feedback received by him/her
Vocational ethics	adheres to the pivotal regulations of workers' rights, benefits, and obligations	adheres to the rules of the workplace community and the pivotal regulations of workers' rights, benefits, and obligations	adheres to the rules of the workplace community and agreed action models and the pivotal regulations of workers' rights, benefits, and obligations
	adopts a positive attitude to the realisation of the principles of sustainable development.	adopts a positive attitude to the realisation of the principles of sustainable development.	promotes the realisation of the principles of sustainable development of his/her field of work.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and carrying out mechanised peat production and storage on a peat production site. The student or candidate carries out the preparatory and reconditioning work on a production area. In addition, the student or candidate sees to the working order of production machines. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least

- ◆ mastering the work process excluding entrepreneurship skills
- ◆ mastering the work methods, equipment and material, excluding preparation, reconditioning and post-production use of a production area, regular maintenances, and road transportation)
- ◆ underpinning knowledge: competence related to fire safety
- ◆ key competences for lifelong learning: competence related to work safety and ergonomics, vocational ethics, learning and problem solving, and interaction and cooperation skills.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods. When assessing a student, who has completed the Class C driver examination, the requirements set out in *Laki kuorma- ja linja-autonkuljettajista* (Lorry and Bus Drivers Act, 273/2007) and in the decree 640/2007 must be taken into account.

4.5.4 Mechanised wood harvesting

Vocational skills requirements

The student or candidate knows how

- ◆ to plan the harvesting of timber
- ◆ to carry out wood harvesting operating at least one machine type
- ◆ to receive and send site data and other such data using a data transmission system
- ◆ to ensure the working order of machines and devices used by him/her and to carry out daily maintenance and checks

- ♦ to take into account the regulations, orders, and instructions pertaining to the preparation of timber
- ♦ to dispose the waste formed on the work site in an appropriate manner and to maintain the general tidiness of the workplace
- ♦ to take into account the requirements of safety, health, and ergonomics in his/her work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of wood harvesting	plans the harvesting of wood in accordance with the work site instructions	plans the harvesting of wood routinely and in accordance with the work site instructions	plans the harvesting of wood routinely and in accordance with the work site instructions, and, where necessary, is able to apply instructions on different work sites
	make use of the essential data transmission applications	fetches the work site instructions and maps using a data transmission system	makes use of the machine's on-board data processing system in the planning of wood harvesting
Management of wood harvesting as a whole and carrying out the work independently and responsibly	carries out the work in accordance with the harvesting plan	carries out the work in accordance with the harvesting plan	carries out the work in accordance with the harvesting plan. Modifies the order of work as necessary
	frequently demonstrates self-initiative and diligence in functions	operates self-reliantly and diligently	operates self-reliantly and diligently, and strives to develop his/her work
			carries out his/her work independently and responsibly from the beginning to the end

Assessment and development of the outcome of one's own work	carries out his/her work in such a manner that harvesting damage attributable to him/her does not exceed the maximum permitted in quality instructions	carries out his/her work in such a manner that any harvesting damage attributable to him/her is minor	carries out his/her work in such a manner that any harvesting damage attributable to him/her is only occasional
	cuts-to-length and sorts the most common timber assortments in accordance with their foremost dimensional and quality requirements	cuts-to-length and sorts the most common timber assortments for the most part in accordance with their dimensional and quality requirements	cuts-to-length and sorts the most common timber assortments in accordance with their dimensional and quality requirements
	assesses the outcome of his/her work in terms of what is good and needs developing.	monitors and assesses the outcome of his/her work and modes of work, and assesses their impacts on the quality of the timber produced.	monitors and assesses the outcome of his/her work and modes of work, and assesses their impacts on the productivity of work and the quality of the timber produced
			endeavours to develop the productivity and quality of his/her work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Mechanised harvesting of timber	equips and adjusts the functions of a machine to enable controlled operation	equips and adjusts the functions of a machine to enable flexible operation	equips and adjusts the functions of a machine to enable economical and effective operation
	carries out the mechanised harvesting of timber in accordance with the quality and harvesting instructions and using a work method appropriate for the work site, and operates the machine in a controlled manner	carries out the mechanised harvesting of timber in accordance with the quality and harvesting instructions and using a work method and machine appropriate for the work site, and operates the machine in a faultless manner	carries out the mechanised harvesting of timber in accordance with the quality and harvesting instructions and using a work method and machine appropriate for the work site, and operates the machine in a flexible manner and in accordance with the principles of economics and efficiency

Maintaining the working order of machinery and devices	attends to the working order of machinery and devices	maintains the working order of machinery and devices and assesses the urgency of possible repairs	maintains the working order of machinery in an anticipating manner and assesses the urgency of possible repairs
	identifies the most common malfunctions and faults and repairs them under guidance	identifies the most common malfunctions and faults and repairs them, and proceeds systematically, under guidance, to perform troubleshooting	identifies the most common malfunctions and faults and repairs them, and proceeds systematically to perform troubleshooting
	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)
Storage of timber	forms storage formations suitable for further transportation	forms storage formations suitable for further transportation	forms storage formations suitable for further transportation
	stores timber so that its quality will not be significantly impaired during storage	stores timber so that its quality will not be impaired during storage	stores timber so that its quality will not be impaired during storage
			stores timber in such a manner as to enable its efficient further processing
Dealing with waste	segregates the waste formed in the course of his/her work and the material due to be recycled and disposes of it in appropriate places reserved for this purpose		
Taking quality action into account in accordance with sustainable development	attends to the general tidiness of the workplace.		

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Adherence to the dimensional and quality requirements of timber assortments	takes into account the dimensional and quality requirements of the most common timber assortments	takes into account the dimensional and quality requirements of timber assortments	takes into account the dimensional and quality requirements of timber assortments
			makes optimal use of the available cross-cutting options

Adherence to forest treatment instructions	operates in accordance with the forest treatment instructions.	applies the forest treatment instructions on the site to be treated.	applies the forest treatment instructions on the site to be treated with due attention to the productivity of the forest and the forest owner's objectives.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	takes into account the health and safety risks of the work by carrying out the work so that it does not constitute a hazard to anyone on the work site		
	operates and services machinery and devices safely		
	knows the major work safety risks caused by the machinery, devices, and the work environment		
	works in an ergonomic manner.		

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by drawing up a harvesting plan. Utilising a data transmission system, he/she receives and sends the necessary work site and other such data. He/she prepares or extracts timber assortments and carries out the daily maintenance and servicing work on the machines and devices used by him/her.

A skills demonstration is to comprise at least

- ◆ mastering the work process in its entirety
- ◆ mastering the work methods, equipment, and materials in its entirety
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning health, safety, and ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5.5 Further processing of energy wood

Vocational skills requirements

The student or candidate knows how

- ◆ to draw up a work plan for a work site where energy wood is processed further or to draw up a plan for the work involved in the further processing of energy wood
- ◆ to carry out chipping, crushing or some other form of further processing
- ◆ to store energy wood products
- ◆ to ensure the working order of the machinery and devices used by him/her and to carry out the topping-up and inspections of fuels and other liquids
- ◆ to ensure the fire safety of his/her workplace, and to dispose of the waste formed in the course of the work to places allocated for the purpose
- ◆ to determine the costs of the work and his/her possibility to function as an entrepreneur in harvesting or processing energy wood
- ◆ to carry out the work taking into account the regulations, orders, and instructions applying to the work
- ◆ to take into account the customers' and the entrepreneur's expectations in his/her work
- ◆ to take into account the safety, health, and ergonomics requirements in his/her work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of work	plans the routine further-processing work of energy wood in accordance with instructions	plans the further processing of energy wood in accordance with instructions	plans the further processing of energy wood in accordance with the instructions. Applies the instructions, as necessary,

Management of the work as a whole and carrying out the work independently and responsibly	carries out the routine work in the planned order	carries out the work in the planned order	carries out the work in the planned order. Modifies the order of work as necessary
	operates mostly self-reliantly and diligently	operates self-reliantly and diligently	operates self-reliantly and diligently, and strives to develop his/her work
Assessment and development of the outcome of one's own work	prepares, under guidance, energy wood or processed wood products in accordance with quality instruction	carries out his/her work in such a way that energy wood or processed wood products reveal some deviations from the quality instructions	carries out his/her work in such a way that the energy wood or processed energy wood complies with the quality instructions
	assesses the impacts of the quality of his/her work on the quality of the energy wood or processed product	assesses the impacts of the quality of his/her work which is in accordance with the quality requirements	monitors the quality of his/her work and work modes. Assesses the impacts of the outcome of his/her work and work modes on productivity and on the quality of energy wood or processed products, and modifies his/her mode of work in accordance with his/her observations
Cost-efficient and successful operation	determines the amount of work time needed for chipping energy wood or for some other processing	determines the price for chipping energy wood or for some other processing applying the given unit prices	determines the price for chipping energy wood or for some other processing in accordance with the general cost structure
	assesses his/her work in relation to quantitative objectives.	assesses the possibilities for entrepreneurship offered by the harvesting or processing of energy wood.	realistically assesses his/her own possibilities to become an entrepreneur engaged in the harvesting or processing of energy wood.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Operating machinery and devices	carries out the basic actions on a machine and devices related to starting work	carries out the actions on a machine and devices related to starting work	carries out the actions on a machine and devices related to starting work so that a machine can be operated with proficiency and efficiently
	operates a machine and a device in a controlled manner, but slowly	operates a machine and a device efficiently	operates a machine and a device in accordance with the principles of economy/efficiency

Servicing and repair of machines	attends to the basic working order of the machinery and devices and identifies the most common faults and malfunctions, and reports on them immediately	maintains the working order of machinery and devices and assesses the urgency of possible repairs	maintains the working order of machinery and devices and assesses the urgency of possible repairs
	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)	identifies hazardous maintenance and repair work, which must not be carried out unassisted (Govt. decree 749/2001)
		identifies and repairs the most common malfunctions and faults	identifies and repairs the most common malfunctions and faults
		carries out troubleshooting systematically for the most part	proceeds systematically in troubleshooting
	carries out the agreed topping-ups and inspections	carries out the agreed topping-ups and inspections	carries out the agreed topping-ups and inspections
	selects the materials, accessories, and tools needed daily and uses them safely	selects the correct materials, accessories, and tools and uses them safely	reserves in advance the correct materials, accessories, and tools and uses them safely
Storage of energy wood	forms storage formations suitable for further transportation	forms storage formations suitable for further transportation	forms storage formations suitable for further transportation
	stores energy wood or processed products in such a manner that their further processing is enabled	stores energy wood or processed products in such a manner that their efficient further processing is enabled	stores energy wood or processed products in such a manner that their efficient further processing is enabled
	forms storage formations under guidance	stores energy wood or processed products in such a manner that their quality will not be impaired during storage	stores energy wood or processed products in such a manner that their quality may improve during storage
Taking fire safety into account	uses, as necessary, initial extinguishing equipment on the work site and raises alarms, as necessary	uses, as necessary, initial extinguishing equipment on the work site	uses, as necessary, initial extinguishing equipment on the work site and knows where it is kept
		functions in accordance with instructions in the event of a fire	functions in accordance with instructions in the event of a fire
			anticipates the most common fire risks
Dealing with waste	segregates the waste formed in the course of his/her work and the material due to be recycled and disposes of them in appropriate places reserved for this purpose.		

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Adherence to environmental protection instructions and identification of environmental risks	functions in accordance with the environmental protection instructions	functions in accordance with the environmental protection instructions	functions in accordance with the environmental protection instructions
		identifies the workplace's foremost environmental risks	identifies the workplace's foremost environmental risks and knows how to prevent their realisation
Cost-efficient and successful operation	determines the principles of high-quality operation in his/her work.	determines his/her work's foremost customer expectations and needs.	determines his/her work's foremost customer expectations and needs
			functions in the interests of the customer and the entrepreneur.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	uses personal protection equipment		
	operates and services machinery and devices safely		
	identifies the biggest health and security risks caused by machines, devices, and the work environment		
	works ergonomically		
	attends to the general tidiness of the work site		
	raises alarms for help in emergencies		
	administers first aid to him/herself and to others		
Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations and adapts his/her behaviour as necessary.	functions as an equal member of the team.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by drawing up the work plan for harvesting energy wood or by planning the work of processing the harvested energy wood. He/she carries out the harvesting work or processing work, and stores the products using machines and devices commonly used for this purpose. He/she carries out the daily maintenance and servicing work on the machines and devices. In addition, the student or candidate prices his/her work.

In the skills demonstration is to comprise at least

- ♦ mastering the work process, excluding entrepreneurship
- ♦ mastering the work methods, equipment, and material excluding fire safety
- ♦ underpinning knowledge: identification of environmental risks
- ♦ key competences for lifelong learning: health, safety, and the ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5.6 Maintenance and servicing of a heating plants

Vocational skills requirements

The student or candidate knows how

- ♦ to plan the work involved in operating and maintaining a heating plant
- ♦ to generate heat when operating a small-scale heating plant running on bioenergy raw material
- ♦ to inspect the working order of heat-generation equipment
- ♦ to maintain a heating plant and a heating network, and to carry out repairs on them
- ♦ to carry out the most ordinary maintenance action in a heating plant
- ♦ to operate the automation system of a small-scale heating plant
- ♦ to determine the moisture level of the fuel in a boiler
- ♦ to maintain the fire safety of a heating plant
- ♦ to serve customers in the course of carrying out his/her work
- ♦ to carry out the work taking into account the regulations, orders, and instructions applying to the work
- ♦ to assess the preconditions for entrepreneurship in his/her field of work
- ♦ to meet the requirements of work safety, health, and ergonomics in his/her work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of work	plans the easiest work involved in the operation and maintenance of a heating plant	plans the foremost work involved in the operation and maintenance of a heating plant	plans the work involved in the operation and maintenance of a heating plant
Management of the entire work process, carrying out the work independently and responsibly	carries out the work in the planned order	carries out the work in the planned order	carries out the work in the planned order
		estimates the duration of the work	estimates the duration of the work and its impacts on heat distribution
Assessment and development of the outcome of one's own work	assesses the immediate impacts of his/her work on the performance of a heating plant	assesses the impacts of his/her work on the performance of a heating plant	assesses the impacts of his/her work on the productivity and performance of a heating plant
Assessment of entrepreneurship in one's own field of work	determines the basic structure of heat generation.	determines the economic principles of the operation of a heat-generation company.	determines the economic principles of the operation of a heat-generation company and the impacts of his/her work on profitability.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Operating a heating plant	makes the adjustments, under guidance, to a heating plant	identifies the main components of a deviation and of the machines and devices commonly used and their working principle, and confirms changes in adjustments from on-duty staff	identifies a deviation, informs on-duty staff of the matter, and fixes the adjustments
		documents a change	checks the impact of changes on the operation of a heat-generation plan
		determines, under guidance, the moisture level of fuel in a boiler	determines the moisture level of fuel in a boiler

Maintaining the working order of a heating plant	identifies and pinpoints the most common malfunctions and repair needs, and reports on them	checks the working order of the foremost heat-generation devices and estimates the urgency of the most common repair needs	checks and maintains the working order of heat-generation devices and estimates the urgency of the most common repair needs
	attends to the working order of a heating plant's simplest devices	carries out the most common maintenance of a heating plant after having received initial guidance, and repairs faults, which can be easily repaired	carries out the most common maintenance of a heating plant and repairs faults, which can be easily repaired
Cost-efficient and successful operation	uses the basic maintenance tools in a safe manner	reserves, under guidance, the necessary materials, accessories, and spare parts	reserves the necessary materials, accessories, and spare parts
		selects the correct tools and uses them safely	selects the correct tools and uses them efficiently and safely
	identifies hazardous maintenance and repair work, which must not be done unassisted.	identifies hazardous maintenance and repair work, which must not be done unassisted.	identifies hazardous maintenance and repair work, which must not be done unassisted.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Familiarity with the combustion process	determines the principle of the combustion process	determines the impacts of adjustments on the combustion process	interprets the foremost indicators and makes, where necessary, amendment presentations regarding the combustion process' adjustments
Adherence to environmental protection instruction and identification of environmental risks	functions in accordance with the workplace's environmental protection instructions	functions in accordance with the workplace's environmental protection instructions	functions in accordance with the workplace's environmental protection instructions
		identifies the workplace's foremost environmental risks	identifies the workplace's foremost environmental risks and knows how to prevent their realisation
Adherence to quality activity in compliance with sustainable development	works with proficiency and takes into account matters such as cost factors in his/her work.	responds to the customer's foremost expectations and needs in his/her work.	responds to the customer's expectations and needs in his/her work. knows what to do in the interests of customers and the entrepreneur.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
4. Key competences for lifelong learning	The student or candidate		
Health, safety and ability to function	adheres to a heating plant's work safety instructions	adheres to a heating plant's work safety instructions	adheres to a heating plant's work safety instructions
		identifies the foremost work safety risks at a heating plant	identifies the foremost work safety risks at a heating plant. Knows how to prevent the risks from materialising
	identifies, under guidance, a heating plant's work safety development needs	identifies a heating plant's work safety development needs	identifies a heating plant's work safety development needs, and makes development proposals related to them
Learning and problem solving	solves the most common problems	solves the most common problems and assesses the reasons leading to the problems	solves the most common problems and assesses the reasons leading to the problems
			assesses the urgency of changes/repairs
Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations, and changes, where necessary, his/her own behaviour.	functions as a member of the team in familiar interaction situations, and knows how to take into account the opinions of others.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and by carrying out operation and maintenance work on a small-scale heating plant running on bioenergy. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least:

- ◆ mastering the work process excluding entrepreneurship skills
- ◆ mastering the work methods, equipment, and material
- ◆ underpinning knowledge: identification of environmental risks
- ◆ key competences for lifelong learning: health, safety, and ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5.7 Peat production

Vocational skills requirements

The student or candidate knows how

- ◆ to plan and to carry out the work involved in harvesting one crop on a production block
- ◆ to maintain the working order of production machines
- ◆ to determine the moisture level of peat
- ◆ to price the work involved in harvesting one crop
- ◆ to carry out the work taking into account the regulations, orders, and instructions applying to the work
- ◆ to take into account the customers' and the entrepreneur's expectations when carrying out his/her work
- ◆ to ensure the fire safety and water protection in his/her work area and to minimise the harm caused by dust
- ◆ to take into account the requirements of safety, health, and ergonomics in his/her work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Planning of the work	plans the work involved in at least one work stage	plans the work involved in one crop turn including the correct order of the work stages and their timing	plans the work involved in one crop turn including the correct order of the work stages and their timing
		assesses the impacts of changes in the external factors on the scheduling	assesses the impacts of changes in the external factors on the realisation of the plan

Management of the entire work process, carrying out the work independently and responsibly	carries out his/her work in the order compliant with the production plan	carries out the work in the order compliant with the production plan and modifies the order as necessary	carries out the work in the order compliant with the production plan determines how the work stages carried out by him/her are connected to the entire peat production process
	acts in a manner demonstrating self-initiative	acts speedily and in a manner demonstrating self-initiative	acts speedily and in a manner demonstrating self-initiative and develops his/her work
		carries out routine work independently and responsibly	carries out his/her work independently and responsibly from the beginning to the end
Assessment and development of the outcome of one's own work	achieves, under guidance, a work outcome in compliance with the quality instructions	achieves, in most cases, a work outcome in compliance with the quality instructions	achieves a work outcome in compliance with the quality instructions
	finds things in his/her modes of work that are good and things which need to be developed	monitors the outcome of his/her work and work modes. Knows how to estimate their impact on peat quality	monitors the outcome of his/her work and work modes. Knows how to estimate their impact on peat quality and production volume
Cost-efficient and successful operation	determines the work hours needed for completing one crop turn's work	determines the work hours needed for completing one crop turn's work and calculates the unit costs using given machine hour prices	determines the unit costs for the work needed for completing one crop turn's work and compares them to average costs
	calculates, under guidance, the unit costs for the work needed for completing one crop turn's work		
	assesses his/her work in relation to quantitative objectives.	knows the possibilities offered for entrepreneurship in peat production.	realistically assesses his/her possibilities to become an entrepreneur in peat production.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Carrying out of mechanised peat production	adjusts, under guidance, a machine and a device	adjusts the pivotal functions of machines and devices and thereby enables peat production in accordance with the quality instructions	adjusts the pivotal functions of machines and devices so that their capacities can be efficiently utilised and thereby enable peat production in accordance with the quality instructions
	carries out the work involved in one crop turn using one production method and using the basic functions of machines and devices. Operating of machines and devices is under control, but operation is still formal (unimaginative)	carries out the work involved in one crop turn using at least one production method using the machines and devices faultlessly	carries out the work involved in one crop turn using at least one production method and using the machines and devices faultlessly and in an appropriate manner
Maintaining the working order of machinery and devices	attends to the working order of machinery and devices	maintains the working order of machinery and devices and assesses the urgency of possible repairs	maintains the working order of machinery and devices and assesses the urgency of possible repairs
	identifies the foremost malfunctions and faults and repairs them under guidance	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies hazardous maintenance and repair work, which must not be done unassisted
	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies and repairs the most common malfunctions and faults needs guidance in systematic troubleshooting	identifies and repairs the most common malfunctions and faults proceeds systematically in troubleshooting
Performance at work and in the workplace community	selects, under guidance, the materials, accessories, and tools needed in his/her work, and uses them safely	selects the materials, accessories, and tools needed in his/her work, and uses them safely	reserves in advance the materials, accessories, and tools needed in his/her work, and uses them safely
		assesses the foremost impacts of peat production on water systems downstream	assesses the foremost environmental impacts of peat production
	attends to water cleaning within his/her work area during production.	attends to water cleaning within his/her work area during production.	attends to water cleaning within his/her work area during production.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Determining the moisture level of the peat	determines the moisture level of the peat using a technical instrument	determines the moisture level of the peat using his/her senses	determines the moisture level of the peat using his/her senses. Knows when to execute the next work stage based on this result.
Taking fire safety into account	takes into account the impact of wind on fire safety	takes into account the impact of the weather conditions and dryness of the production area on fire safety	takes into account the impact of the weather conditions and dryness of the production area on fire safety
	attends to the fire safety aspects of his/her work	attends to the fire safety aspects of his/her work	assesses what the work site's fire safety plan includes minimises the fire safety risks of his/her work
Minimising of harm caused by dust	determines the kinds of harm related to dust which are caused by the work	determines the kinds of harm related to dust which are caused by the work and knows the foremost impacts on the environment	determines the kinds of harm related to dust which are caused by the work and knows the foremost impacts on the environment
		minimises the foremost harm caused by dust	appropriately minimises the harm caused by dust in connection with his/her work
Taking water protection into account	uses the production area's water cleaning system.	uses the production area's water cleaning system.	uses the production area's water cleaning system.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
4. Key competences for lifelong learning	The student or candidate		
Health, safety and ability to function	operates and services machinery and devices safely		
	identifies the biggest health and security risks caused by machines, devices, and the work environment		
	works ergonomically		
	raises alarms for help in emergencies		
	administers first aid to him/herself and to others		
Interaction and cooperation	functions as a member of the team in familiar interaction situations.	functions as a member of the team in familiar interaction situations and adapts his/her behaviour as necessary.	functions as an equal member of the team.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and carrying out two of the following work stages in peat production: producing peat sods onto the field, milling, turning, harrowing, loading, driving, suction-collecting, mechanised-collecting or stockpiling. He/she attends to the working order of production machines and prices the work done in connection with one crop turn.

A skills demonstration is to comprise at least:

- ♦ mastering the work process, excluding peat production entrepreneurship
- ♦ mastering the work method, equipment and material
- ♦ underpinning knowledge: fire safety and identification of environmental risks
- ♦ key competences for lifelong learning: at least health, safety, and ability to function

The work stages to be assessed when demonstrating vocational competence cannot be the same as those included in the study module Procurement and Use of Bio Raw Materials. If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.5.8 Short-rotation cultivation

Vocational skills requirements

The student or candidate knows how

- ♦ to plan and schedule the short-rotation cultivation work on a block of land reserved for this purpose
- ♦ to carry out short-rotation cultivation work
- ♦ to maintain the working order of the machines and devices
- ♦ to price the work involved in short-rotation cultivation on one block of land
- ♦ to take into account the customers' and the entrepreneur's expectations when carrying out his/her work
- ♦ to ensure fire safety and water protection within his/her work area
- ♦ to take into account the requirements of health, safety, and ergonomics in his/her work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning of the work	plans at least one stage of cultivation or one stage of harvesting	plans and schedules at least one stage of cultivation or one stage of harvesting. The scheduling is required to be in compliance with national and EU support conditions and regulations	plans and schedules cultivation and harvesting work. The scheduling is required to be in compliance with national and EU support conditions and regulations
Management of the entire work process, carrying out the work independently and responsibly	carries out the work in the planned order	carries out the work in the order as per the plan and keeps to the schedule that has been drawn up	carries out the work in accordance with the cultivation and work plan
	acts in a manner demonstrating self-initiative	operates self-reliantly and diligently	operates self-reliantly and diligently
		carries out routine work independently and responsibly	carries out his/her work independently and responsibly from the beginning to the end
Assessment of the work outcome and assessment and development of one's own work	works, under guidance, in a manner in compliance with good cultivation	achieves an outcome in his/her work in compliance with good cultivation	achieves an outcome in his/her work in compliance with good cultivation and the habitat
	finds good and to-be-developed aspects in his/her plan	monitors and assesses the outcome of his/her work and modes of work, and assesses their impacts on the quality of the work	knows how to assess his/her own plan and work, and assesses the impacts of his/her work on the quality of the work and output of the work
Assessment of the possibilities of becoming an entrepreneur	determines the work hours needed for the work on one cultivation block	knows how to determine the work hours needed for the work on one cultivation block and to calculate the unit costs using the given machine hour rates	determines the unit costs for the work on one cultivation block and compares them with the average costs

	calculates, under guidance, the unit costs for the work on one cultivation block.	assesses the preconditions and possibilities for entrepreneurship in short-rotation cultivation.	assesses the preconditions and possibilities for entrepreneurship in short-rotation cultivation and knows how to assess his/her own possibilities as an entrepreneur in short-rotation cultivation.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Operating machinery and devices	adjusts, under guidance, a machine and a device so that these can be used to achieve a work outcome in compliance with a good mode of cultivation	adjusts a machine and a device so that these can be used to work in a manner in compliance with a good mode of cultivation	adjusts machines and devices to suit the circumstances so that these can be used to work in a manner in compliance with a good mode of cultivation and efficiently. Takes into account changing circumstances
Quality performance in compliance with sustainable development	functions, under guidance, in accordance with the agreed quality objectives and objectives of sustainable development	functions in accordance with the company's or organisation's quality objectives and objectives of sustainable development	functions in accordance with the company's or organisation's quality objectives and objectives of sustainable development
Maintaining the working order of machinery and devices	operates machines and devices in a controlled manner under guidance	operates machines and devices efficiently	operates machines and devices smoothly and efficiently
	attends the basic operating condition of machinery and devices	maintains the working order of machinery and devices and assesses the urgency of possible repairs	maintains the working order of machinery and devices and assesses the urgency of possible repairs
	perceives the most common malfunctions and faults, and repairs them under guidance	perceives the most common malfunctions and faults, and repairs them, but needs guidance in systematic troubleshooting	perceives and repairs the most common malfunctions and faults, and proceeds systematically in troubleshooting
	selects, under guidance, the correct materials, accessories, and tools, and uses safely the tools needed in maintenance	selects the correct materials, accessories, and tools, and uses safely the tools needed in maintenance	reserves the correct materials, accessories, and tools, and uses correctly and safely the tools needed in maintenance
	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies hazardous maintenance and repair work, which must not be done unassisted	identifies hazardous maintenance and repair work, which must not be done unassisted

Management of materials and accessories	reserves and uses the materials and accessories as set out in the plan.	reserves and uses the materials and accessories as set out in the plan monitors material consumption.	reserves and uses the materials and accessories as set out in the plan. Monitors material consumption and ensures its adequacy. Knows how to time topping-up and emptying.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Taking fire safety into account	adheres to the workplace's fire safety instructions and knows how to raise an alarm for help when necessary	adheres to the workplace's fire safety instructions and takes into account in his/her work the cultivation substrate, the being cultivated, and the fire safety aspects of the machine being used	adheres to the workplace's fire safety instructions and takes into account the prevailing conditions when implementing fire safety decisions. Provides grounds for his/her decisions.
Selecting areas suitable for cultivation and plants suitable for the sites	assesses the basic requirements of a short-rotation plant.	assesses which short-rotation plants are suitable for a cultivation site.	assesses which short-rotation plants are economically suitable for a cultivation site.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Health, safety and ability to function	operates and services machinery and devices safely		
	to identify the biggest health and safety risks associated with the work environment and the machines and devices he/she is using		
	works ergonomically		
	raises alarms for help in emergencies		
	administers first aid to him/herself and to others		
Learning and problem solving	solves often repeated problems.	solves the most common problems and assesses the reasons leading to the problems.	solves the most common problems
			avoids problems by modifying his/her behaviour.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and scheduling short-rotation cultivation work on a block of cultivation land. He/she carries out two of the following work stages in short-rotation cultivation: basic tilling, sowing tilling, sowing (and fertilisation), fertilisation, plant protection, mowing, threshing or baling. He/she carries out this work while operating machines and devices generally used in short-rotation cultivation. He/she attends to the working order of the machines and devices, and prices the short-rotation cultivation work for one block of cultivation land.

A skills demonstration is to comprise at least:

- ◆ mastering the work process, excluding entrepreneurship
- ◆ mastering the work method, equipment, and material
- ◆ underpinning knowledge: competence related to fire safety
- ◆ key competences for lifelong learning: competence related to health, safety, and ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.6 OPTIONAL MODULES FOR ALL

4.6.1 Modules from vocational upper secondary qualifications

At least one module from other vocational upper secondary qualifications can be included in the Vocational Qualification in Forestry.

A certificate is always issued by the qualification committee in charge of the qualification in question and the qualification committee of Forestry approves the module in question as a part of the Vocational Qualification in Forestry on the basis of the certificate.

4.6.2 Module from further vocational qualifications

At least one vocational module from further vocational qualifications can be included in the Vocational Qualification in Forestry.

The education provider must have a valid contract for arranging the further vocational qualification in question or the education provider can purchase the competence tests from an education provider with such a contract for arranging qualifications.

In vocational upper secondary education and training, a certificate of a completed module from further vocational qualifications is always issued by the qualification committee in charge of the qualification in question and the education provider accepts the further vocational qualification module into the qualification certificate of the student.

In a competence-based qualification system, a certificate of a completed module from further vocational qualifications in question is always issued by the committee in charge of the qualification in question and the Qualification Committee for Forestry approves the module as part of the Vocational Qualification in Forestry on the basis of the certificate.

4.6.3 Module from specialist vocational qualifications

At least one vocational module from specialist vocational qualifications can be included in the Vocational Qualification in Forestry.

The education provider must have a valid contract for arranging the special vocational qualification in question or the education provider can purchase the competence tests from an education provider with such a contract for arranging qualifications.

In vocational upper secondary education and training, a certificate of a completed module from specialist vocational qualifications is always issued by the qualification committee in charge of the qualification in question and the education provider accepts the specialist vocational qualification module into the qualification certificate of the student.

In a competence-based qualification system, a certificate of a completed module from specialist vocational qualifications in question is always issued by the committee in charge of the relevant qualification. The Qualification Committee for Forestry approves the module in question as part of the Vocational Qualification in Forestry on the basis of the certificate.

4.6.4 Locally offered modules

In its approved curriculum, the education provider offers modules that include vocational skills requirements based on the needs of local and regional working life. The module names must reflect the integrated activities in working life. Skills requirements and assessment criteria must be drawn up for them as well as ways to demonstrate vocational skills in line with Chapter 9.3 in the appendices under “Vocational skills requirements, targets of assessment and general assessment criteria”.

4.7 OTHER OPTIONAL MODULES IN VOCATIONAL UPPER SECONDARY EDUCATION AND TRAINING

In its approved curriculum, the education provider offers optional modules, which can be advanced or enhancing optional modules, core subjects or general upper secondary studies. Advanced or enhancing vocational modules may include modules with contents based on needs of local or regional working life, modules from other vocational qualifications as well as competence acquired at work. The modules must have a name and their skills requirements, objectives and assessment criteria listed, as well as the ways of demonstrating the skills described for vocational modules.

As to offering other optional modules, the education provider may work together with working life and other education providers. The student can also choose these modules from modules offered by other education providers.

The scope of core subjects and general upper secondary studies must not exceed 10 credits in optional modules.

4.7.1 Entrepreneurship

Skills requirements

As part of a team, a student will be able to

- ◆ assess productization opportunities
- ◆ assess the operating opportunities of a planned business
- ◆ specify a financially profitable business idea and develop a mission statement
- ◆ find a working partner company
- ◆ draw up a preliminary business and financial plan
- ◆ present the business and financial plans to business consultants and financiers

- ◆ negotiate on the company’s operating opportunities and financing required to set it up
- ◆ set up a business
- ◆ plan and start business operations
- ◆ work in the business and carry out its core tasks
- ◆ work with providers of business support services
- ◆ terminate the business activities on completion of studies or continue them as part of his/her Business Operations studies (10 credits) aiming at setting up a business of his/her own.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. The targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	Student		
Planning one’s own work	contributes to planning business operations and works as a team member	plans business operations and works spontaneously and responsibly as a team member	plans business operations innovatively and works spontaneously, responsibly and supportively as a team member
	assumes responsibility for his/her work as agreed	assumes joint responsibility for the tasks agreed	assumes responsibility for the activities of the whole team for completing the tasks agreed under joint responsibility
Mastering the work entity	proceeds systematically in his/her work under instructions	proceeds systematically and fluently in his/her work	advances systematically and fluently in his/her work adjusting it to the activities of the team
	participates in agreed meetings with the partner networks	acquires partners and acts in partner networks	acquires partners and makes use of partner networks to develop operations

High-quality operations	works in accordance with quality objectives set for his/her work and changes his/her own activities based on given feedback	works in accordance with the quality objectives set together and assesses his/her own activities in reaching them	works in accordance with the quality objectives set together and develops his/her activities to reach them
	works in a service oriented manner.	works in a service oriented manner and promotes customer satisfaction.	works in a service oriented manner and promotes customer satisfaction.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	Student		
	uses the most common company tools, such as equipment and machinery, computers and applications	uses company tools, such as equipment and machinery, computers and applications	uses the company tools, such as equipment and machinery, computers and applications independently
	observes the principles of information security.	observes the principles of information security.	observes the principles of information security.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA			
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3	
	Student			
	Assessing productizing and operating opportunities	makes use of the business opportunities in productizing offered by his/or her own field or other fields in cooperation with the team	makes use of the business opportunities in productizing, offered by his/or her own field or other fields in cooperation with the team	makes use of the business opportunities in productizing, offered by his/or her own field or other fields in cooperation with the team
			searches information available in different networks	makes use of information available in different networks
		surveys businesses operating in the field and finds information on acting as an entrepreneur in the field, working under instructions in a team	surveys businesses operating in the field and finds information on acting as an entrepreneur in the field, working in a team	surveys businesses operating in the field and finds information on acting as an entrepreneur in the field, working in a team
		follows development in the field from business point of view, working under instructions in a team	follows development in the field from business point of view working in a team	follows development and outlook in the field from business point of view working in a team
		assesses his/her own possibilities as an entrepreneur, working under guidance in a team	assesses his/her own possibilities as an entrepreneur working in a team	assesses independently his/her possibilities as an entrepreneur and sets personal development objectives

Refining the business plan	finds out about the operating opportunities of the enterprise to be set up, working under guidance in a team	finds out about and reports on the operating opportunities of the enterprise to be set up in cooperation with the team	finds out about and reports on the operating opportunities of the enterprise to be set up in cooperation with the team
	selects form of enterprise and draws up the documents needed for setting up a business, working under instructions in a team	selects form of enterprise and draws up the documents needed for setting up a business, working in a team	selects form of enterprise and draws up the documents needed for setting up a business, working in a team
		takes part in acquiring information from key authorities	acquires information from key authorities independently
Planning business operations and working in the company	takes part in search for information needed when planning operations, e.g. how a product or service is produced and sold and how finances are taken care of, working under instructions in a team	takes part in search for information needed when planning operations, e.g. how a product or service is produced and sold and how finances are taken care of, working in a team	makes use of information needed when planning operations on how a product or service is produced and sold and how finances are taken care of, working in a team
	takes part in search for information needed when planning company logistics working under guidance in a team	takes part in search for information needed when planning company logistics, working in a team	makes use of information needed when planning company logistics, working in a team
	working in a team, acquires information on support services available when setting up a business and running it, e.g. accounting office services	working in a team, acquires information on support services available when setting up a business and running it, e.g. accounting office services	working in a team, acquires information on support services available when setting up a business and running it, e.g. accounting office services
	applies the underpinning knowledge needed to complete agreed tasks, working under instructions	applies the underpinning knowledge needed to run the business	independently applies the underpinning knowledge needed to run the business
	finds out under guidance what legislation requires bookkeeping	finds out what legislation requires bookkeeping	finds out what legislation requires bookkeeping and why
	keeps the receipts and vouchers needed for bookkeeping, working under instructions.	keeps the receipts and vouchers needed for bookkeeping	keeps the receipts and vouchers needed for bookkeeping
			interprets the business's profit and loss account and balance sheet e.g. with the help of an accounting firm.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
4. Key competences for lifelong learning	Student		
Learning and problem solving	acquires under instructions information on key regulations related to products, services and contracts	finds information on key legislation and other statutes concerning products, services and contracts	applies key legislation and other statutes concerning products, services and contracts
Interaction and cooperation	participates in preparing choices and decisions in the team	makes proposals, choices and decisions in the team	makes justified proposals, choices and decisions in the team to develop business operations
	assesses his/her own activities and progress made under guidance	assesses his/her own activities and progress made	assesses his/her own activities and progress made in his/her work and business operations
	participates in cooperation negotiations with team members and stakeholders	negotiates on cooperation with team members and participates in negotiations with stakeholders	negotiates on cooperation with team members and stakeholders
Vocational ethics	observes financial, social and sustainable development related values in business operations under instructions	observes financial, social and sustainable development related values in business operations	observes financial, social and sustainable development related values in business operations
Health, safety and ability to function	follows occupational safety regulations in the field in his/her activities and customer service situations	follows occupational safety regulations in the field in his/her activities and customer service situations	follows occupational safety regulations in the field in his/her activities and customer service situations
	protects him-/herself from work and working environment related dangers under guidance	protects him-/herself from work and working environment related dangers	protects him-/herself from work and working environment related dangers
	ensures his/her own safety and that of the colleagues and customers in familiar situations under guidance.	ensures his/her own safety and that of the colleagues and customers in different situations as instructed.	ensures his/her own safety and that of the colleagues and customers in different situations
			develops the safety of his/her team and ability to work by developing own working practices and environment instructs others to act in a healthy and safe way when working as a team member.

Ways of demonstrating vocational skills

Student demonstrates his/her vocational skills by working in cooperation with team members, representatives of partner companies, stakeholders or other parties in practice enterprises and the like.

A skills demonstration must cover completely

- ◆ mastering the work processes
- ◆ mastering the work methods, equipment and material
- ◆ underpinning knowledge
- ◆ mastering key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration in full, it is completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.7.2 Workplace Instructor Training

Skills requirements

Student is able to

- ◆ recognise the tasks at the workplace suited to on-the-job learning or skills demonstrations and finds out about their targets of assessment and assessment criteria
- ◆ negotiate on implementation of on-the-job learning and skills demonstrations in the work community
- ◆ prepare on-the-job learning and skills demonstration plans in cooperation with the teacher and workplace instructor
- ◆ instruct other students on the working tasks, customs and rules at the workplace or at school
- ◆ present the training and working opportunities in the field e.g. to students in an introductory period
- ◆ have guidance discussions, develop own activities based on feedback and arbitrate differences of opinion
- ◆ work with different learners and colleagues
- ◆ receive and give constructive feedback
- ◆ self-assess on-the-job learning and skills demonstration in accordance with the targets of assessment and assessment criteria agreed earlier
- ◆ assess occupational safety risks in his/her work and know how to act and also instruct others to act in accordance with the occupational safety instructions.

Assessment

The table comprises the targets of assessment and assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	Student		
Planning one's own work and drawing up plans	prepares on-the-job learning and skills demonstration plans under instructions	prepares on-the-job learning and skills demonstration plans as instructed	prepares on-the-job learning and skills demonstration plans independently and proactively
Mastering the work entity	needs instructions at times.	completes given tasks independently.	proceeds fluently in his/her work adjusting it to the activities of the working environment.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	Student		
Guiding a student	guides other students under instructions	guides other students as instructed and holds guidance discussions	instructs other students, acts flexibly with different people and arbitrates differences of opinion
Assessing a student	accepts and gives feedback on a tasks under instructions as well as, under instructions, self-assesses on-the-job learning and skills demonstrations based on targets of assessment and assessment criteria agreed beforehand.	accepts and gives feedback on a task as well as self-assesses on-the-job learning and skills demonstrations based on targets of assessment and assessment criteria agreed beforehand.	holds constructive feedback discussions and self-assesses on-the-job learning and skills demonstrations based on targets of assessment and assessment criteria agreed beforehand.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of working life and training opportunities in one's own field	presents some of the working and training opportunities in the field	presents working and training opportunities in the field	presents independently and variedly working and training opportunities in the field
Knowledge of curricula	recognises, under instructions, the subject matter to be learnt during on-the-job learning and the competence to be assessed in skills demonstration.	recognizes, as instructed, the subject matter to be learnt during on-the-job learning and the competence to be assessed in skills demonstration.	recognizes independently the subject matter to be learnt during on-the-job learning and the competence to be assessed in skills demonstration.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	Student		
Health, safety and ability to function	assesses occupational safety risks involved and follows the occupational safety instructions given.	assesses occupational safety risks involved and follows the occupational safety instructions given.	assesses occupational safety risks involved, follows and also instructs others to follow the occupational safety instructions given.

Ways of demonstrating vocational skills

Student demonstrates his/her vocational skills by preparing an on-the-job learning or skills demonstration plan. He/She studies the activities, tasks, working culture and rules of the work community and assesses the occupational safety risks and ergonomics issues involved from his/her own work point of view. Student examines the opportunities of arranging his/her on-the-job learning and skills demonstration assessments at the workplace.

The skills demonstration is mainly given in connection with another skills demonstration.

A skills demonstration is to comprise at least

- ◆ mastering the work process
- ◆ mastering the work methods, equipment and materials: the guidance of the student, the assessment of learning and competence
- ◆ underpinning knowledge: the knowledge of the requirements of vocational qualifications
- ◆ mastering the key competences for lifelong learning: health, safety and ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration in full, it is completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.7.3 In-depth and enhancing vocational modules

In its approved curriculum, the education provider offers advanced or enhancing vocational modules the contents of which are based on the needs of local or regional working life. The module names must reflect the integrated activities in working life and their skills requirements, objectives and assessment criteria must be drawn up as well as the ways of demonstrating the skills in line with what is said in Chapter 9.3 in the appendices under “Vocational skills requirements, targets of assessment and general assessment criteria”. As to offering other optional modules, the education provider can work together with working life and other education providers.

4.7.4 Core subjects

In its curriculum, the education provider offers core subjects which increase the student’s opportunities of choosing core subjects listed in Chapter 5. The modules can be optional supplements to the compulsory ones (see the qualification requirements Chapter 5.2.1). The education provider determines the objectives, core contents and assessment for these modules. The modules may also be optional modules from core subjects presented in the qualification requirements in Chapters 5.2.2–5.2.7. The education provider may also offer them in cooperation with other education providers. The student can also choose these studies from modules offered by other education providers.

4.7.5 General upper secondary studies

In its curriculum, the education provider offers a student an opportunity to include in his/her qualification general upper secondary studies arranged by general upper secondary schools in accordance with the general upper secondary school curriculum and for which the general upper secondary school awards a certificate. The education provider may also offer them in cooperation with other education providers. The education provider can also decide that a student can choose general upper secondary studies (e.g. e-learning) from the spectrum offered by different general upper secondary education providers.

4.8 MODULES PROVIDING INDIVIDUAL IN-DEPTH VOCATIONAL COMPETENCE (MODULES THAT EXPAND THE SCOPE OF A VOCATIONAL UPPER SECONDARY QUALIFICATION)

The student or candidate may individually include in his/her vocational upper secondary qualification more modules, when it is necessary from the point of view of field-specific or local skills requirements or strengthening the vocational skills of the candidate. Modules providing advanced individual vocational competence should be implemented as widely as possible in workplaces with working life.

4.8.1 Business Operations

Skills requirements

The student or candidate is able to

- ◆ assess the possibilities of productization of his/her own competence (product or service)
- ◆ study the business operations environment of the company to be established
 - identify and acquire cooperation businesses and partners
 - find, recognise and assess the company's operating potential
- ◆ select a financially profitable business idea and develop a mission statement
- ◆ draw up a business plan for the enterprise
 - make a management plan for the company's accounts and finance and find out about the resources required to run it
 - present the business and financial plans to business consultants and financiers
 - negotiate on company's operating potential and financing
 - plan the manufacturing of the company's products and provision of its services
 - prepare a marketing plan and report on it as well as decide on marketing activities
 - make the logistics decisions needed
 - prepare a company risk analysis
 - plan the implementation and key tasks of profitable business operations
- ◆ select the form of enterprise, establish a business and close it down.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning one's own work and drawing up plans	plans business operations under guidance	plans the operations of his/her enterprise and acts independently and responsibly	plans the operations of his/her enterprise innovatively and acts independently, responsibly and supportively
Managing the work entity	proceeds systematically in his/her work under guidance	proceeds systematically and fluently in his/her work	proceeds systematically and fluently in his/her work
	acquires a partner company under guidance	acquires partners and acts in partner networks	acquires partners, makes use of partner networks to develop operations
High-quality operations	works in accordance with quality objectives set for his/her work and changes own activities based on given feedback	acts in accordance with quality objectives set and assesses own activities in reaching them	acts in accordance with quality objectives set and develops own activities to reach them
	works in a service oriented manner.	works in a service oriented manner and promotes customer satisfaction.	works in a service oriented manner and promotes customer satisfaction.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
2. Mastering the work method, equipment and material	The student or candidate		
Technology and information technology	uses customary tools such as equipment and machinery, computer and software needed when setting up his/her business	uses tools such as equipment and machinery, computer and software needed when setting up his/her business	uses independently tools such as equipment and machinery, computer and software needed when setting up his/her business
	acts in accordance with the principles of information security.	acts in accordance with the principles of information security.	acts in accordance with the principles of information security.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
3. Underpinning knowledge	The student or candidate		
Assessment of productization opportunities	makes use, under guidance, of the business opportunities in productization	makes use of the business opportunities in productization	makes use of the business opportunities in productization
	searches information available in different networks under guidance	searches information available in different networks	makes use of information available in different networks
	identifies companies operating in the field and finds information on acting as an entrepreneur in the field under instructions	identifies companies operating in the field and finds information on acting as an entrepreneur in the field	identifies companies operating in the field and finds information on acting as an entrepreneur in the field
Looking into the business environment	follows, under instructions, development in the field from the point of view of starting business operations	follows development in the field from the point of view of starting business operations	follows development and outlook in the field from the point of view of starting business operations
	assesses his/her chances as an entrepreneur under guidance	assesses his/her chances as an entrepreneur	assesses independently his/her chances as an entrepreneur and sets personal development objectives
Choosing business idea	finds out about the business opportunities of the enterprise to be established under guidance	finds out about and reports on the business opportunities of the enterprise to be established	finds out about and reports on the business opportunities of the enterprise to be established
	acquires information from key authorities under instructions	acquires information from key authorities	acquires information from key authorities independently
	acquires under instructions information needed in planning business operations like how a product is made or service provided, sold and how accounting and finances are taken care of	acquires information needed in planning his/her business operations like how a product is made or service provided, sold and how accounting and finances are taken care of	makes use of information needed in planning his/her business operations like how a product is made or service provided, sold and how accounting and finances are taken care of

Drawing up a business plan	acquires under instructions information needed in planning company logistics	acquires information needed in planning company logistics	makes use of information needed in planning company logistics
	uses under instructions information needed in company risk analysis	uses information needed in company risk analysis	applies information needed in company risk analysis
	acquires under instructions information on support services available when setting up a business and running it, e.g. accounting office services	acquires information on support services available when setting up a business and running it, e.g. accounting office services	acquires information on support services available when setting up a business and running it, e.g. accounting office services
	acquires under instructions information on the entrepreneur's role in book-keeping and profit and loss analysis	acquires information on the entrepreneur's role in book-keeping and profit and loss analysis	acquires information on the entrepreneur's role in book-keeping and analysing the profit and loss account and balance sheet
	acquires under instructions information on key statutes related to products, services and contracts	acquires information on key legislation and statutes concerning products, services and contracts	applies key legislation and other statutes concerning products, services and contracts
Choosing form of enterprise, setting it up and closing it down	chooses under instructions form of enterprise and draws up the documents needed when setting up and closing down a business.	chooses form of enterprise and draws up the documents needed when setting up and closing down a business.	chooses form of enterprise and draws up the documents needed when setting up and closing down a business.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Learning and problem solving	<p>makes decisions under instructions</p> <p>assesses his/her own activities and progress made under guidance</p>	<p>makes choices and decisions</p> <p>assesses his/her own activities and progress made</p>	<p>makes valid proposals, choices and decisions to develop company operations</p> <p>assesses his/her own activities independently and progress in his/her work and company operations</p>
Interaction and cooperation	negotiates under guidance on cooperation with stakeholders	negotiates on cooperation with stakeholders	negotiates innovatively on cooperation with stakeholders
Vocational ethics	observes under instructions the financial, social and sustainable development values agreed when planning business operations	observes the financial, social and sustainable development values agreed when planning business operations	observes the financial, social and sustainable development values when planning business operations

Health, safety and ability to function	prepares under instructions plans on observance of occupational safety regulations in his/her business	prepares plans on observance of occupational safety regulations in his/her business	prepares independently plans on observance of occupational safety regulations in his/her business
	prepares under instructions plans on how to protect oneself against work and working environment related dangers.	prepares plans on how to protect oneself against dangers related to the work done and the working environment.	prepares spontaneously plans on how to prepare against dangers related to the work done and the working environment.

Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning the operations of his/her own enterprise and acting in cooperation with different stakeholders.

Skills demonstration is to cover completely

- ◆ mastering the work processes
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration in full, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

4.8.2 Modules from vocational qualifications (vocational upper secondary qualifications, further vocational qualifications and specialist vocational qualifications)

1. Modules from vocational upper secondary qualifications

Modules from vocational upper secondary qualifications can be included in the Vocational Qualification in Forestry, in accordance with the student’s or candidate’s individual study plan.

In the competence-based qualification system, a certificate of a completed upper secondary module is always awarded by the committee in charge of the upper secondary qualification concerned. The Qualification Committee responsible for the specialisation of the qualification concerned accepts the module in question as part of the Vocational Qualification in Forestry based on the certificate.

2. Modules from further vocational qualifications

Modules from further vocational qualifications can be included in the Vocational Qualification in Forestry, in accordance with the student's or candidate's individual study plan.

The education provider must have a valid contract for arranging competence-based qualification in question or the education provider can buy the competence tests from an education provider with a contract.

In vocational upper secondary education, a certificate of a completed further vocational qualification module is always awarded by the committee in charge of the further vocational qualification concerned and education provider accepts the module into student's qualification certificate.

In the competence-based qualification system, a certificate of a completed further vocational qualification module is always awarded by the Qualification Committee in charge of the further vocational qualification concerned. The Qualification Committee of the Vocational Qualification in Forestry accepts the module in question as part of the Vocational Qualification in Forestry based on the certificate.

3. Modules from specialist vocational qualifications

Modules from specialist vocational qualifications can be included in the Vocational Qualification in Forestry, in accordance with the student's or candidate's individual study plan.

The education provider must have a valid contract for arranging competence-based qualification in question or the education provider can buy the competence tests from an education provider with a contract.

In vocational upper secondary education, a certificate of a completed specialist vocational qualification module is always awarded by the Qualification Committee of the specialist vocational qualification concerned and education provider accepts the module into student's qualification certificate.

In the competence-based qualification system, a certificate of the completed module of specialist vocational qualification is always awarded by the committee in charge of the specialist vocational qualification concerned. The Qualification Committee of the Vocational Qualification in Forestry accepts the module of specialist vocational qualification in question as part of the Vocational Qualification in Forestry based on the certificate.

4.8.3 Locally offered modules providing in-depth vocational competence in curriculum-based vocational education and training

The education provider can provide in its approved curriculum the student with a chance to take individually vocational in-depth modules that correspond with local or regional working life skills requirements together with the student's need for deeper vocational skills. The modules must be named and their skills requirements, assessment criteria and ways of demonstrating vocational skills must be determined.

4.9 FINAL PROJECT IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING

The student will plan and complete a Final Project that will demonstrate his/her competence. It can be, for example, a product, demonstration of skill, portfolio or performance. The student recognises his/her vocational key strengths and develops his/her creativity, innovativeness and promotes personal professional growth while completing the Final Project. He/she presents and assesses his/her Final Project as well as its planning process and realisation. With the Final Project, the student promotes his/her own employment. With the Final Project, the student promotes his/her own employment.

The education provider decides how the Final Project is carried out.

5

THE OBJECTIVES AND ASSESSMENT OF CORE SUBJECTS IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING, 20 CREDITS

5.1 COMPULSORY MODULES

5.1.1 Mother tongue, 4 credits

5.1.1.1 MOTHER TONGUE, FINNISH

Objectives

Student

- ◆ communicates and acts in an interactive situation so that he/she can practice their profession, contribute to working life, be an active citizen and pursue further studies
- ◆ possesses the text skills needed in working life
- ◆ knows how to act in a multi-cultural and multi-lingual environment
- ◆ understands the key concepts and contents as well as the meaning of texts related to their own vocational field
- ◆ acquires information from different sources in different ways and conveys it in speech and in writing
- ◆ interprets different text types and fiction
- ◆ assesses his/her skills in mother tongue and develops them continuously
- ◆ knows how to act in different interactive situations in the field of forestry
- ◆ masters different oral situations in the field of forestry e.g. presenting work and his/her final project
- ◆ knows how to draw up the most common written documents in his/her field
- ◆ knows how to behave in a job hunting situation and how to draw up applications with relevant references
- ◆ makes use of journals and newspapers and other media in the field of forestry
- ◆ is critical in his/her use of media and knows the principles of the use of sources
- ◆ develops his/her communication and interaction skills and contributes to the development of communication at work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	acquires information essential to his/her vocational field from clear texts under instruction	acquires information related to his/her vocational field from different sources and uses reliable texts	acquires information from different sources and from even difficult texts and assesses their reliability
Comprehension of texts	understands the core meaning of the text from vocation point of view and knows how to combine its information to his/her own experiences and knowledge	understands the meaning and main contents of the text and also knows how to combine and compare its details to his/her own experiences and knowledge	understands both the meaning and message of the text as well as the meaning of the details, draws conclusions and evaluates the contents and the way of expression used in the text
Written communications	writes under instruction texts that are vital to vocational skills	writes texts that are vital to one's vocational skills	writes target oriented and processes his/her texts based his/her own evaluation and feedback
	knows the basics of spelling	uses fluent phrase and sentence structure and breaks text into paragraphs	masters the basic norms of language use and also improves the wording and layout of the written text
	compiles documents under guidance following a model	draws up appropriate documents	draws up appropriate documents and knows how to use document templates
	observes the requirements of the text type following a model	observes the requirements of the text and uses his/her knowledge of other text types	applies text type requirements in his/her own texts

Interaction and acting in working life language situations	acts appropriately in interactive situations, like when applying for a job	acts appropriately and politely in interactive situations, like when applying for a job	is customer-orientated, flexible and convincing in different interactive situations
	participates in conversation making statements	participates in a conversation and takes it forward towards the target	participates in the conversation in an active and constructive way and is partly responsible for the communication atmosphere
	validates his/her own opinions	gives a variety of grounds for his/her opinions and claims	gives a variety of grounds for his/her own views and also assesses the points made
	knows how to give a short presentation	creates contact to his/her listeners as he/she speaks and knows how to construct his/her statement in a way that it is easy to follow	can maintain interaction while speaking, knows how to exemplify his/her presentation and how to construct its contents logically
Media competence	knows the central media in the vocational field	uses key communication tools and assesses media texts	makes versatile use of communication tools and assesses media texts critically
	observes copyrights under guidance	sees copyrights as rights and obligations and observes them by citing his/her sources	knows how to cite the sources used and asks permission to use them if necessary
Knowledge of language and culture	recognizes the meaning of his/her own language and the meaning of cross-cultural communication	takes into account the cross-cultural communication in his/her own interactive situations	applies cross-cultural communications and his/her own cultural skills and acts liberally
	uses literature and other art forms to acquire experiences.	knows how to construe literature and other art forms.	knows how to analyze and interpret literature and other art forms.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 7. Aesthetics, 8. Communications and media skills, 10. Technology and information technology, 11. Active citizenship and different cultures

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (ÄIS1), *Structures and meanings of texts* (ÄIS2) *Means of influence* (ÄIS4) and one of the following *Literary texts* (ÄIS3), *Text, style and context* (ÄIS5), *Language, literature and identity* (ÄIS6) or *Oral communication* (ÄIS7) compensate for *Mother tongue, Finnish studies* in core subjects.

5.1.1.2 MOTHER TONGUE, SWEDISH

In education and training provided in Swedish, the objectives and assessment criteria for mother tongue studies are the same as when the studies are in Finnish.

5.1.1.3 MOTHER TONGUE, SAAMI

Objectives

Student

- ◆ acquires versatile experiences in Saami both oral and textual
- ◆ understands his/her lingual roots and the development of his/her own lingual identity
- ◆ recognizes the meaning of language and culture to the work community
- ◆ familiarizes him/herself with Saami story telling tradition and its meaning to the Saami language and culture
- ◆ acquires information from different Saami language sources and also passes it on both in speech and in writing
- ◆ expands experience and work environment to other Saami language professionals in the field of forestry, who live in Nordic countries and in Russia
- ◆ understands the meaning of multiculturalism and multilingualism and also develops lingual and cultural tolerance
- ◆ draws up the most common written work of the field of forestry in Saami
- ◆ writes a report and job applications in Saami
- ◆ knows how to act when applying for a job and in other oral communication situations in the their own vocational field
- ◆ knows how to act in Saami in different interactive situations in the field of forestry
- ◆ knows how to communicate and interact in Saami so that he/she can participate in working life, be an active citizen and pursue further studies
- ◆ evaluates the his/her own mother tongue skills.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	knows the basic features of Saami culture	knows the background of national Saami language and culture formation	strengthens and develops his/her own lingual identity
	uses Saami story telling tradition under instruction	know Saami culture and familiarises himself/herself with its unique character, e.g. story telling tradition	uses Saami story telling tradition and knows the history of Saami people through it
	recognizes the variety and significance of languages and cultures	takes into account the meaning of different cultures and languages in communication situations in his/activities	recognizes the common roots of Saami and Finnish languages
Acquiring information and media competence	makes use of professional papers and other media in the field under instruction	uses the key communication tools in the field	acquires and analyses enriching experiences by making use of the various communications tools
	knows the key media used in the vocational field	recognizes the different influences of the media and evaluates them	makes versatile use of the key media contents in the field and interprets them objectively
Understanding texts	understands the core of the Saami language text and knows how to combine its information with his/her own experiences and knowledge	understands the meaning of the text and its core content in Saami language and knows how to combine and compare its details to his/her own experiences and knowledge	understands the meaning of the text as well as the meaning of its message, draws conclusions and evaluates the content and the way the text is written
Written communication	knows the basics of Saami language spelling	uses fluent phrase and sentence structure and breaks the text into paragraphs	plans his/her writing according to the objective and also improves his/her text according based on his/her own assessment as well as that of the others
	writes in full sentences and uses information technology	compiles a text that is valid in contents and layout and matches the title and the meaning of the text	compiles a text, that is both diverse in contents and fluent and coherent in structure
		communicates in writing according to the situation	compiles written documents for use in the vocational field as well as the community

Interaction and acting in working life language situations	acts correctly in interactive situations	acts correctly and politely in interactive situations	acts flexibly and convincingly in interactive situations
	participates in conversation making statements	participates in the conversation and directs the it towards desired end result	participates in the conversation in an active and constructive way
	gives a short presentation.	creates contact with his/her listeners when speaking and knows how to construct his/her speech in a way that it is easy to follow.	maintains interaction while speaking, knows how to exemplify his/her presentation and how to construct its contents logically.

Key competences for lifelong learning: 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (ÄIS1), *Structures and meanings of texts* (ÄIS2) *Means of influence* (ÄIS4) and one of the following *Literary texts* (ÄIS3), *Text, style and context* (ÄIS5), *Language, literature and identity* (ÄIS6) or *Oral communication* (ÄIS7) compensate for *Mother tongue, Saami studies* in core subjects.

5.1.1.4 MOTHER TONGUE, SIGN LANGUAGE

Objectives

Student

- ◆ knows how to use sign language to exercise skills in the field of forestry
- ◆ appreciates the sign language skills as a part of his/her identity
- ◆ acts in sign language in interactive situations that require both spoken and written language
- ◆ knows how to communicate and interact in sign language in working life, as an active citizen and a further education student
- ◆ knows how to communicate in a way that makes social interaction, learning and working life success possible.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	understands the stature of sign language community in multilingual Finnish society	compares the communication used by signed and spoken language cultures	knows the background of the sign language community and knows how to represent the minority culture in the prevailing multilingual culture
	recognizes the core characteristics of signed and spoken language	makes use of the characteristics of signed and spoken languages	strengthens and develops his/her own lingual identity and the vocational field signs
Knowledge of sign language linguistics	knows the core structure of the sign language	lists basic features in his/her mother tongue and analyses his/her own language use in relation to others	masters the basic structure of sign language
	uses sign language dictionaries under instruction	uses sign language dictionaries independently	searches for diverse information in sign language dictionaries and textbooks
	recognizes the different forms of sign language (general and spoken language situations)	ponders the objective contents of sign language texts	knows the linguistic characteristics of sign language
Interaction and acting in working life language situations	uses vocation related signs under instruction	knows general set of signs and vocation related sign set	knows vocation related sign set well and the linguistic features related to professional identity
	acts correctly in interactive situations	participates in the conversation and directs the it towards desired end result	uses sign language that is structurally fluent and rich in expression
	reads signed (videoed) texts	explains professional things in sign language in presentations and in instructions prepared for others	reads texts written in sign language objectively and utilises the newly acquired information
	produces and understands sign language	produces short presentations in sign language and uses sign language in conversations	maintains interaction while speaking and produces presentations in sign language, in which he/she makes use of the ways of expression and presentation ways used in the sign language culture
	gives a short presentation in sign language	acts in different environments with people, who use sign language and with those who can hear	

Use of learning skills and means of help	knows how to use a sign language interpreter in one-on-one conversations	knows how and when to use an interpreter	knows how to use a sign language interpreter fluently in various situations
	uses the professional literature and work manuals with the help of sign language under instruction	uses information search fluently and searches information independently from different sources	interprets the information gathered from different points of view and forwards it using sign language
	uses memory techniques in work assignments under instruction	uses different learning strategies in sign language studies	utilises different learning strategies in his/her sign language studies
	masters the basics of communication technology and information search skills.	produces simple presentations with communication tools.	uses communication tools variedly when producing presentations in sign language.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communication and media skills.

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (ÄIV1), *Structures and meanings of texts* (ÄIV2), *Texts and influence* (ÄIV4), and one of the following *Devices and influence of literature* (ÄIV3), *Text, style and context* (ÄIV5), *Language, literature and identity* (ÄIV6) or *Advanced Oral communication* (ÄIV7) compensate for *Mother tongue, Sign language studies* in core subjects.

5.1.1.5 MOTHER TONGUE, ONE'S OWN MOTHER TONGUE FOR FOREIGN LANGUAGE USERS

Objectives

Student

- ◆ reads, writes and expresses himself/herself in his/her mother tongue
- ◆ understands the lingual roots and the development of his/her own identity
- ◆ uses his/her own mother tongue and Finnish or Swedish in different connections
- ◆ acquires information in various ways from different sources and also forwards it orally and in writing
- ◆ knows how to communicate and to interact so that he/she can participate in working life in the field of forestry, be an active citizen and pursue further studies
- ◆ knows how to act in a multicultural society and in professional situations appreciating his/her own language and Finnish traditions

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	perceives the writing methods of his/her own language	reads and writes short texts in his/her own language	reads variable texts in his/her own language and writes text for different purposes
	knows how to tell about main characteristics of his/her language environment and culture	pursues practical studies into the literature his/her own language and cultural circle	knows the structure and grammar of his/her own mother tongue
	can name the cultural roots of his/her language	knows the cultural roots of his/her own language and its family of languages	achieves strong cultural identity and preserves cultural bindings in the environment he/she has grown up in
		knows the ways of use of his/her mother tongue and its varieties in his/her region	is interested in his/her mother tongue and language background and is motivated to develop his/her mother tongue skills
Acquiring information and media skills	knows the most important communication channels of his/her own language	acquires information in his/her own mother tongue utilising different communication tools (for example dictionaries, data networks)	acquires information in his/her own mother tongue utilising different communication tools and compares different sources objectively

Interaction and acting in working life language situations	knows how to give a short presentation in his/her mother tongue	knows how to communicate coherently in his/her own mother tongue in professional matters	compiles different texts observing the communication traditions of his/her own culture and uses oral skills actively
	knows the forms of oral expressions in his/her own and in Finnish culture	compares the use of his/her own language and Finnish	compares the communication of people who speak the same language and Finnish speaking people
	expresses himself/herself orally in the most common language situations in his/her cultural circle.	uses the key terms of his/her own vocational field and participates in conversations in his/her own language region	knows how to act in a similar profession in his/her own culture
		understands the meaning of bilingualism to his/her own work.	expands his/her vocational vocabulary and develops his/her vocational skills in his/her own language if needed.

Key competences for lifelong learning: 2. Interaction and cooperation, 8. Communication and media skills, 10. Technology and information technology, 11. Active citizenship and different cultures

In validation of prior learning general upper secondary school courses One's own mother tongue and its use *Language, texts and interaction* (ÄIM1) and *Culture in the language area* (ÄIM3), *Communication and society* (ÄIM4), *World of information* (ÄIM6) compensate for *Mother tongue, one's own mother tongue for foreign language students* studies in core subjects.

5.1.1.6 MOTHER TONGUE, FINNISH AS A SECOND LANGUAGE

Objectives

Student

- ♦ possesses such communication and interactive skills that he/she has adequate recourses for working life, active citizenship and further studies
- ♦ understands the key contents of oral communication in Finnish, follows the topic studied easily and is able to participate in the work
- ♦ understands the key contents of written study material and is able to use it to make progress his/her studies

- ◆ gets inspiration and experiences when studying literature and different text types in Finnish and if possible in his/her mother tongue
- ◆ writes documents needed in their vocational field and other texts
- ◆ masters the key structures of Finnish language as well as professional vocabulary and expressions in the field of forestry
- ◆ knows how to act in his/her profession observing the main procedures of Finnish working life and society
- ◆ searches information from different sources, uses dictionaries and makes notes independently and also uses material from literal and network sources to develop his/her language skills and further his/her studies.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	acquires information essential to his/her vocational field from clear texts under instruction	acquires information related to his/her vocational field from different sources and uses reliable texts	acquires information from different sources, even difficult texts, and assesses their reliability
Comprehension of texts	understands short practical texts, key words and important details and also texts, whose contents are professionally relevant	understands professional texts on his/her own field or on general topics and also texts that need little more inference, knows how to search and combine information from several different texts a few pages long	also understands texts independently on abstract topics that can be related to his/her own field of work and occupational safety, quickly perceives the contents and importance of the text and applies it to different assignments
Written communication	writes short structured text on familiar topics in most common written communication contexts and also possesses the vocabulary and structures needed to create general and professional texts	writes texts on familiar abstract as well as vocational field related topics, uses vocabulary and sentence structures that are needed for variable writing and also writes understandable and practically flawless language	writes fluent and detailed texts also on abstract topics and work assignments, combines or summarises information from different sources to his/her text, commands a vast vocabulary and demanding sentence structures and has the language skills to write fluent structured text

Interaction and acting in working life language situations	understands a speech on studying or his/her vocational field and a conversation containing general vocabulary	understands conversations that cover general topics and factual matters or are related to his/her vocational field and masters the vocabulary	understands concrete and abstract spoken language also when it is related to his/her vocational field, recognises different styles of speech and knows how to summarize key elements and important details from what he/she has heard
	speaks about familiar things and manages unofficial conversations and also communicates in different vocational situations	speaks about ordinary concrete topics and explains matters related to his/her work and also communicates using an vast vocabulary , variable structures and complicated sentences	communicates clearly in situations related to his/her experience and vocational field as well as in most practical and social situations and formal conversations, uses language structures and a fairly extensive vocabulary
Knowledge of language and culture	knows about Finnish society and culture and understands the importance of cross-cultural communication	understands the norms of Finnish society and the procedures of working life and also takes into account the cross-cultural communication in his/her interaction	applies the information on Finnish social norms and working life procedures and also applies cross-cultural communication and his/her own cultural skills
Language studies	knows different ways of studying languages and the principles of using dictionaries and other information sources.	applies different ways of studying languages and uses dictionaries and other information sources to facilitate understanding.	applies different language studying strategies in his/her studies and also uses dictionaries and other information sources to complete assignments.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

When defining the objectives of Finnish studies, the description scale of the common European framework of reference for languages: learning, teaching and assessment is applied, level B2.1 of which (basic level of independent language skills) describes in the main a student's excellent skills at the end of the studies. (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school courses *Mastering the basics* (S21), *Putting language into action* (S22), *Advanced textual skills* (S24) and *Getting to know Finnish culture* (S25) compensate for *Mother tongue, Finnish as a second language* in core subjects.

5.1.1.7 MOTHER TONGUE, SWEDISH AS A SECOND LANGUAGE

In education and training provided in Swedish the objectives and assessment criteria for *Mother tongue, Swedish as a second language* are the same as when the studies are in Finnish for *Mother tongue, Finnish as a second language*.

5.1.1.8 MOTHER TONGUE, FINNISH OR SWEDISH FOR SIGN LANGUAGE USERS

Objectives

Student

- ◆ acquires and passes on information according to his/her individual starting points and communicates in Finnish or Swedish in different situations
- ◆ is able to consider the connection with working life requirements and the culture and history of the deaf in the texts used
- ◆ produces texts needed in the field of forestry
- ◆ uses professional Finnish or Swedish and his/her other language skills when interacting with those who can hear
- ◆ compares the forms of expression and grammar between sign language and spoken or written language
- ◆ knows how to work actively in communities and in such professional contexts in the field of forestry where Finnish or Swedish and sign language are used.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	acquires information in Finnish or Swedish under guidance	uses Finnish or Swedish in information gathering in his/her professional field	acquires information independently from written and digital sources and assesses them objectively
Comprehension of text	understands the key contents of a general or professional text	understands the contents and style of a general text and compares literary, general and colloquial texts	understands without difficulty both general and professionally oriented written texts
Written communication	writes about general topics and uses understandable language	compiles short written abstract from a general text	writes fluently understandable, articulate and precise general language and also masters spelling and punctuation rules
	draws up appropriate job applications under instruction and following an example	draws up appropriate job applications	draws up appropriate job applications identifying the applicant's skills
	writes general language so he/she copes with familiar communication situations	makes an understandable input in written communication	conveys and explains written texts in sign language comments on texts and information sources objectively
Interaction and acting in working life language situations	reads professional, cultural and private life text examples	reacts appropriately to different messages and asks for more information when needed	conveys orders and messages and is able to complete assignments in Finnish
	acts cooperatively at work using helpful tools if needed	works cooperatively as a member of a team and knows how to convey messages	works in a team and communicates professionally and responsibly with people who can hear as well as the deaf
Media skills	recognizes and observes the changing media environment	observes and assesses objectively the contents and ways of expression used in the media	uses glossaries and electronic databases flexibly to understand text
Knowing the grammar features of sign language and spoken language	knows the key differences of sign language and written language.	compares the typical spoken language structures to those in sign language.	knows the principles and form of spoken Finnish or Swedish and compares them to the ones in sign language.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communication and media skills.

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (V21), *Text structures and meanings* (V22), *Texts and making an impact* (V24) and one of the following: *Means and interpretation of literature* (V23), *Text, style and context* (V25), *Language, literature and identity* (V26) or *In-depth course in oral communication* compensate for *Mother tongue, Finnish for sign language users* studies in core subjects.

5.1.1.9 MOTHER TONGUE, ROMANY

Objectives

Student

- ◆ uses Romany language and cultural heritage as a tool for interaction and thinking in Romany community and in professional connections
- ◆ acquires information from different Romany language sources
- ◆ masters such communication and interaction skills that he/she can participate in working life, act as an active citizen and apply for further studies
- ◆ acts in different interactive situations in the field of forestry in Romany
- ◆ masters spoken communication situations in the field of forestry
- ◆ masters the key structures of Romany as well as the professional vocabulary and expressions in the field of forestry.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	knows the key features of Romany culture and analyses his/her own language use compared to others	knows the background and culture of the national Romany language and also strengthens and develops his/her own lingual identity	understands for his/her own part the meaning of lingual identity and acts according to the Romany culture
Acquiring information	searches for information from clear Romany texts under guidance	searches for many kinds of information from clear Romany texts	masters the sources and materials that exist in Romany language and uses them in his/her writing
Comprehension of texts	understands the essence of a Romany text and knows how to combine its information with his/her own experiences and knowledge	understands the main idea of a Romany factual text and writes different kinds of texts in Romany	understands both the meaning and message of the text, draws conclusions and assesses the content and the way of expression
Interaction and acting in working life language situations	participates understandably in written and oral communication at work	communicates in Romany orally and literally according to the situation	communicates in Romany in speech and in writing according to the situation and develops his/her skills based on feedback
		reacts appropriately to different messages and asks for more information when needed	manages him-/herself naturally in different situations in Romany
Knowledge of Romany linguistics	has a sufficient vocabulary on familiar things in Romany.	is quite confident in his/her use of language forms in both oral and written communication.	uses fluent Romany clause and sentence structure.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 11. Active citizenship and different cultures.

In validation of prior learning general upper secondary school courses *Strengthening the linguistic foundation* (ÄIR1) and *Expanding language skills beyond family and friends* (ÄIR2), *The Romany language and culture in modern society* (ÄIR6) and one of the following: *Oral and written Romany traditions* (ÄIR3), *History and distribution of the Romany language and culture* (ÄIR4), *Romany literature and other arts* (ÄIR5) or *Romany discourse skills and culture* compensate for *Mother tongue, Romany studies* in core subjects.

5.1.2 Second national language

5.1.2.1 SECOND NATIONAL LANGUAGE, SWEDISH, 1 CREDIT

Objectives

Student

- ◆ manages routine work assignments in their own vocational field and everyday situations in the second national language
- ◆ understands the significance of the both national languages and cultures in a multi-cultural Finland.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	knows the basic principles of using dictionaries and other information sources	uses dictionaries and also other, for example electronic information sources	uses dictionaries, electronic and other sources to acquire further information from simple foreign language instructions in his/her own vocational field
Comprehension of text and written communication	understands the contents of short and simple written messages related to his/her own work and work safety, using helpful tools	writes such short work related texts as work and safety instructions following an example	writes short work related notes, instructions or order forms
Interaction and acting in working life language situations	tells about himself/herself in few words or about familiar things in his/her work	manages routine day-to-day conversation situations, if the other person talks slowly and uses simple, basic vocabulary	acts in common communication situations both face-to-face and on the phone and asks for elaboration or clarification if needed
Significance of language and culture	is aware of the significance of Swedish language and culture	understands the meaning of Swedish language and culture when meeting people from the Nordic countries	understands the position of Swedish language and culture in multi-cultural Finland

Language studies	recognizes his/her own learning strategies.	recognizes the strengths and weaknesses of his/her own learning strategies.	tries new strategies and ways of learning.
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Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

Grade Good 2 equals listening and text comprehension language skill level A1.3–A2.1 and speaking and writing skill level A1.3–A2.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Translated into Finnish by Irma Hutunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school courses *Everyday living in the Nordic countries* (RUA1) or *School and leisure* (RUB1) compensate for *Second national language, Swedish* studies in core subjects.

5.1.2.2 SECOND NATIONAL LANGUAGE, FINNISH, 2 CREDITS

Objectives

The student possesses such communication and interaction skills that he/she can manage work assignments in their vocational field in Finnish and understands the significance of Finnish in his/her work and private life.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	knows the basic principles of using dictionaries and other information sources	uses professional dictionaries and Finnish language databases	uses dictionaries, manuals, reference books and Finnish websites to gather information
Comprehension of text and written communication	understands the contents of simple work or everyday life related instructions or notices in Finnish	understands the contents of work or everyday life related instructions or notices in Finnish	reads easily and understands various professional texts and manuals in Finnish and follows professionally relevant events from Finnish professional publications and social events in Finnish media
	writes short notices, fills in forms and writes short reviews in Finnish using tools	writes notices, letters and even longer reviews or minutes in Finnish, using tools if needed	fills in forms, writes orders, letters and reports and also answers to inquiries in writing in Finnish
Interaction and acting in working life language situations	understands simple, work or everyday life related instructions and orders and is able to acceptably address a customer or co-worker in Finnish and understand questions made to him/her	understands clear instructions and spoken language in normal tempo at work or on the phone, knows how to interact and understand a customer or a co-worker and also follows professional and social events in the media	understands various instructions and professionally related conversation even when spoken in fast tempo, interacts with Finnish speaking customers naturally and understands their ways and wishes
	attends to Finnish speaking customers satisfactorily, copes with everyday situations and handles the most important work assignments in Finnish	attends to Finnish speaking customers well, answers questions and handles work assignments on the phone and also participates in routine Finnish language conversations at work	discusses his/her work assignments in Finnish without difficulty, knows how to describe processes and details and starts and carries on conversations in Finnish using variable speaking tempo
Significance of language and culture	understands the significance of mastering Finnish in everyday interaction as well as in the Finnish work community	works well in a Finnish work community and strives to improve his/her professional language skills	plays an active role in the Finnish work community and shows interest in the Finnish culture
Language studies	recognizes his/her own learning strategy.	recognizes the strengths and weaknesses of his/her own learning strategy.	tries new strategies and ways of learning.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

Grade Good 2 equals listening and text comprehension language skill level B1.2 and speaking and writing skill level B1.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school courses *Everyday life and leisure* (FINA1) and one of the following: *Nature and the environment* (FINA2) *Commerce, technology and communications* (FINA3), *Society and the media* (FINA4), *Education, occupational and economic life* (FINA5) or *Finnish culture and literature* (FINA6) compensate for *Second national language, Finnish studies* in core subjects.

5.1.3 Foreign language

5.1.3.1 FOREIGN LANGUAGE, A LANGUAGE, 2 CREDITS

Objectives

Student

- ◆ communicates and acts in interactive situations in a way that he/she can work in his/her profession, contribute to working life, be an active citizen and pursue further studies
- ◆ possesses the language skills required in customer service situations in the field of forestry
- ◆ knows how to act in a multicultural and multilingual environment.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	searches for information in work related materials and instructions under instruction and using dictionaries	searches for professionally relevant information using dictionaries and also other, for example electronic information sources	searches for professionally relevant information in various ways, applies his/her knowledge and skills and justifies his/her decisions
Comprehension of text and written communication	understands short and simple written messages that are related to his/her vocational field	understands written instructions that are related to his/her work, products and processes using tools, asks detailed questions and knows how to act according to the answers given	understands written instructions that are related to his/her work, products and processes and the feedback given
	writes simple and short work related texts under instruction	writes simple and short work related texts following an example	writes usual personal messages and short texts and fills in simple work related documents
Interaction and acting in working life language situations	understands short and simple oral messages related to his/her vocational field and knows how to act according to them	understands the most common oral instructions related to his/her work, products and processes and knows how to act according to them	understands the main idea of ordinary speech in normal tempo and acts accordingly
	tells briefly about himself/herself and about tasks in his/her vocational field by answering the questions asked in foreseeable and familiar work situations	tells about himself/herself and his/her duties in a way that he/she is understood and participates in the conversation if the partner talks slowly and uses simple structures	tells in familiar situations about his/her workplace and duties and about related norms and customs, finds out about the similar things in other countries and acquires further instructions on the duties if needed
Knowledge of language and culture	is aware of the significance of the language studied as well as the culture it represents	understands the significance of the language studied as well as the culture it represents	applies his/her knowledge and skills of the foreign language and culture
Language studies	recognizes his/her own learning strategies.	assesses the strengths and weaknesses of his/her own learning strategies.	strengthens his/her learning by trying new strategies and ways of learning.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

Grade Good 2 equals listening and text comprehension language skill level A2.2 and speaking and writing skill level A2.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school A Language courses *Young people and their world* and *Study and work* compensate for *Foreign language, A language* studies in core subjects.

5.1.3.2 FOREIGN LANGUAGE, B LANGUAGE, 2 CREDITS

Objectives

Student

- ◆ copes with everyday situations
- ◆ knows how to act in foreseeable and recurring work related communication situations using the foreign language

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the qualification module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	knows the principles of using dictionaries and other information sources	uses dictionaries and other information sources, also electronic, to help him/her to understand	uses dictionaries and other information sources, also electronic, to help him/her produce texts

Understanding texts and written communication	writes under guidance and using helpful tools simple texts, e. g. instructions, adverts or lists from familiar topics	writes texts that consist of short and, using helpful tools, simple sayings and sentences, such as instructions, adverts or lists that are related to well known topics	writes, among other things, texts that consist of short and, using helpful tools, simple sayings and sentences, such as instructions, adverts or lists that are related to familiar topics in both private- and in working life
Interaction and functioning in language situations in working life	can tell about himself/herself and his/her work in few words, e. g. recognizes tools, titles and assignments	asks simple questions and answers accordingly when the discussion is about immediate, concrete environment and himself/herself, when the conversation partner talks slowly and clearly	asks simple questions and answers them when the discussion is about immediate, concrete environment and himself/herself, when the conversation partner talks clearly and also asks for clarification – if needed
			communicates orally e. g. when introducing himself/herself in everyday or working life familiar situations
Knowledge of language and culture	recognizes and differs new sounds and signs	writes new signs and produces new sounds	advances the learning of the new language by comparing it to other languages he/she already masters
Language studies	recognizes his/her own study strategies.	evaluates the strengths and weaknesses of his/her own study strategies.	strengthens his/her learning by trying out new strategies and ways of learning.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation.

Grade Good 2 equals listening and text comprehension language skill level A1.1 and speaking and writing skill level A1.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school B1 courses *Young people and their world* and *Study, work and society* compensate for *Foreign language, B language studies* in core subjects.

5.1.4 Mathematics, 3 credits

Objectives

Student

- ◆ masters basic mathematics, percentage calculations and unit variations and uses them to make calculations in their own vocational field
- ◆ counts areas and volumes and also applies geometry to the extent required in forestry
- ◆ uses appropriate mathematical solutions to solve problems in their own vocational field
- ◆ expresses dependencies of variables with mathematical expressions
- ◆ creates and forms equations, expressions, charts and drawings needed for the work and solves work-related mathematical assignments using equations, deduction and graphs and assesses the correctness of his/her results
- ◆ uses a calculator, computer and other mathematical tools to help solve problems when needed.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Basic mathematical calculations, percentage calculations and unit variations as well as mathematical key concepts and ways of expression	completes routine work-related calculations and knows mathematical key concepts and ways of expression	completes profession related calculations proficiently and uses, to some extent, mathematical concepts and ways of expression in his/her presentation	applies calculations that are needed in his/her profession and assesses the accuracy of the results and masters the mathematical concepts and ways of presentation that are needed in his/her profession
Mathematical procedures, problem solving and result assessment	solves basic, work-related mathematical problems, either by deduction, graphic expression or calculating and also knows how to assess the scale of the results	solves profession related problems using mathematical procedures and assesses the correctness of the results	applies mathematical procedures in solving and forming profession related problems and assesses the reliability and precision of the methods

Using a calculator and computer	uses a calculator and computer to help solve work-related mathematical basic assignments	uses a calculator and computer efficiently to help solve work-related mathematical problems	uses a calculator and computer innovatively to help solve profession related mathematical problems
Processing, analyzing and producing numeric data	uses statistics, charts and graphical presentations as information sources	uses statistics, charts and graphical presentations to solve profession related problems	applies statistics, charts and graphical presentations to solve profession related problems and also presents the mathematical results as statistics, charts and graphic presentations
	calculates under instruction mathematical averages of material presented.	calculates essential statistical key figures.	calculates or defines statistical key figures on the material given.

Key competences for lifelong learning: 1. Learning and problem solving, 9. Mathematics and natural sciences.

In validation of prior learning general upper secondary school courses *Expressions and equations* (MAB1) and *Geometry* (MAB2) or *Functions and equations* (MAA1) compensate for *Mathematics* studies in core subjects.

5.1.5 Physics and chemistry, 2 credits

Objectives

Student

- ◆ applies the most common physical and chemical phenomena, concepts and laws relevant to their work
- ◆ knows how to take into account the laws of nature in his/her work and other activities and acts observing them to save the environment and energy
- ◆ addresses basic environmental problems from a scientific point of view
- ◆ applies the basic laws and concepts of physics to their own vocational field
- ◆ knows the key concepts and phenomena in mechanics, thermal physics and electricity related to their work so that he/she can work with equipment and systems needed in his/her vocational field safely and economically and works ergonomically
- ◆ considers environmentally and professionally relevant central chemical phenomena, which requires him/her to know the chemical properties of the most common elements and inorganic and organic compounds

- ◆ stores, uses correctly and disposes appropriately of the substances needed in their own vocational field as well as calculates contents and concentrations
- ◆ is able to interpret factors affecting health and safety from product markings, e.g. on pesticides, fertilizers, disinfectants, fuel and lubricants, as well as to consider the special properties of substances in a way that does not endanger his/her own safety or that of the environment
- ◆ observes and measures physical and chemical phenomena relevant to work
- ◆ gathers, processes and analyses the observations and measurements made

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowing the laws of thermal physics, mechanics and electricity and taking them into consideration at work	knows the laws of physics well enough to take into account the relevant related phenomena but needs guidance at times	takes into account the laws of physics in his/her work assignments	knows how to apply the laws of physics in his/her work independently
Knowing chemical substances and compounds as well as their properties and taking them into consideration at work	handles, stores and disposes correctly of the chemicals he/she uses at work and takes into account the properties and environmental risks of different substances but needs guidance at times	handles, stores and disposes correctly of the chemicals he/she uses at work and takes into account the properties and environmental risks of different substances in familiar work situations	handles, stores and disposes correctly of the chemicals he/she uses at work and takes into account the properties and environmental risks of different substances in changing work situations
	interprets the most common product markings but needs guidance at times	interprets the most common product markings	interprets independently different product markings in the field
	calculates concentrations and substance quantities under guidance as well as searches for information in chemical safety data sheets under instruction	calculates concentrations and substance quantities as well as searches for information in material safety data sheets	calculates concentrations and substance quantities flexibly in different work situations using the information he/she has obtained from different sources

Observation and measurement	carries out measurements using the most common methods and equipment in a guided work situation	carries out measurements using the most common methods and equipment independently and knows how to assess the reliability of the results	uses the most suitable measurement methods and equipment professionally, takes measurements in an organized and cautious way and knows how to assess the precision and reliability of the observations and measurements
	documents the measurements and observations made according to instructions and presents them as tables and graphs and calculates results if needed but needs guidance in certain areas	knows how to analyze the measurements and observations as well as to draw conclusions on the results	knows how to report and present results as well as how to assess the precision and reliability of the results and conclusions
Working safely and ergonomically	works according to safety instructions but needs guidance for ergonomic working.	works ergonomically and observing safety instructions.	works ergonomically and observing safety instructions and takes into account the risk factors in the working environment independently.

Key competences for lifelong learning: 1. Learning and problem solving, 4. Health, safety and ability to function, 6. Sustainable development 9. Mathematics and natural sciences, 10. Technology and information technology.

In validation of prior learning general upper secondary school courses *Physics as a natural science* (FY1) and *The chemistry of man and of the living environment* (KE1) compensate for *Physics and chemistry* studies in core subjects.

5.1.6 Social, business and labour-market subjects, 1 credit

Objectives

Student

- ◆ contributes to the management of common affairs at school and in the on-the-job training place
- ◆ assesses his/her abilities to be an active citizen and consumer
- ◆ knows how to use the services society offers
- ◆ draws up a plan on how to take care of his/her own finances
- ◆ assesses the significance of entrepreneurship to Finnish national economy
- ◆ searches for information on workplaces in the field of forestry as well as information on the European Union and its citizens.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Participation at school and in the on-the-job training organization	participates in the management of common affairs under guidance	participates in the management of common affairs as agreed and knows the social decision making process	participates in the management of common affairs independently and knows the social decision making process
Assessing the opportunities to act	assesses his/her abilities to act as a citizen and consumer under guidance	assesses his/her opportunities to function as a citizen and consumer	assesses his/her opportunities to function as an active citizen and as a consumer
	knows the rights, obligations and ways to influence as a student	knows the rights, privileges, obligations and key ways to influence as a student and citizen	knows the rights, privileges, obligations and key democratic ways to influence as a student and citizen
	searches for information on the basic rights and responsibilities of a consumer	knows the basic rights and responsibilities of a consumer	knows the basic rights and responsibilities of a consumer
Using the services of society	uses the services a student needs and understands the citizens' role in financing them	uses the services society offers and understands the citizens' role in financing them	uses the services society offers independently and understands the citizens' role in financing them

Taking care of one's own finances	draws up a plan for his/her expenditure and finances under guidance	draws up a plan for his/her expenditure and finances	draws up a plan for his/her expenditure and finances
	searches for information on financing options and their costs under guidance	searches for information on financing options and their costs	searches for information about financing sources and compares their costs
Assessing the key factors affecting national economy	assesses the key impact of entrepreneurship on employment	assesses the impact of entrepreneurship and business operations on employment	assesses the impact of entrepreneurship and business operations on employment independently
Searching for information vacancies in the vocational field and the European Union	searches for information on vacancies in the vocational field locally	searches for information on vacancies in the vocational field regionally and nationally	searches for information on vacancies in the vocational field regionally, nationally and in other EU countries
	searches for information on EU citizens under guidance.	searches for information on the EU and its citizens.	searches for comparative information on the EU and its citizens.

Key competences for lifelong learning: 2. Interaction and cooperation, 5. Initiative and entrepreneurship, 11. Active citizenship and different cultures.

In validation of prior learning general upper secondary school courses *Politics and society* (YH1) and *Economics* (YH2) compensate for *Social, business and labour-market* studies in core subjects.

5.1.7 Physical education, 1 credit

Objectives

Student

- ◆ promotes a healthy and active lifestyle through physical education while understanding the benefits of physical education to one's ability to function and work
- ◆ gets familiar with physical exercise that benefits health, mental vitality and endurance variedly
- ◆ keeps up his/her ability to function through exercise
- ◆ exercises and acts responsibly both alone and in group
- ◆ promotes the functioning and safety of the group with his/her actions.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Supporting and strengthening physical ability to function	uses the basic skills needed for physical exercise	uses the basic skills needed for physical exercise variedly	uses the basic skills needed for physical exercise and sport specific skills variedly
	keeps up his/her physical ability to function under guidance	keeps up his/her physical ability to function	monitors, assesses and keeps up his/her physical ability to function
Keeping up and promoting physical, psychological and social wellbeing with the help of physical exercise	understands the meaning of exercise to physical, psychological and social wellbeing under guidance	understands the meaning of exercise to his/her physical, psychological and social wellbeing	understands the meaning of exercise to physical, psychological and social wellbeing
Interaction and cooperation	takes part in physical exercise following the instructions given and observes the principles of fair play	takes an active part in physical exercise observing the principles of fair play	takes an active part in physical exercise promoting the principles of fair play
Considering health, safety and ability to function	usually observes safety in sports.	acts safely when taking physical exercise both independently and in a group.	promotes group safety with his/her actions.

Key competences for lifelong learning: 2. Interaction and cooperation, 4. Health, safety and ability to function.

In validation of prior learning general upper secondary school courses *Skill and condition* (LI1) or *Individual and group training* (LI2) compensate for *Physical education* studies in core subjects.

5.1.8 Health education, 1 credit

Objectives

Student

- ◆ displays the aspiration and ability to maintain and promote health with his/her actions and knowledge
- ◆ understands in his/her own lifestyle and environment the factors that impact physical, mental and social ability to function
- ◆ knows the meaning of mental health, sexual health and human relations to one's wellbeing
- ◆ knows the harms of smoking and intoxicants and knows how to prevent health damaging factors
- ◆ knows about lifestyles and habits that benefit health
- ◆ understands the links between exercise, nutrition, rest, sleep, recreation, human relations and health and takes them into account in his/her actions
- ◆ recognizes the basic factors that burden health and ability to work in their field and knows how to develop his/her working methods, the safety and healthiness of his/her working environment in cooperation with others
- ◆ knows how to prevent injuries typical of the vocational field when working, copes with the most common first aid situations and how to get help as well as how to act ergonomically
- ◆ knows about the health differences of the population and the risk factors of the most common national diseases and how to prevent them
- ◆ recognizes the factors that influence his/her endurance and knows how to work to promote it
- ◆ knows how to use student and other healthcare services, engage in health enhancing physical activity and understands their significance to maintaining his/her ability to function.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Maintaining and promoting physical, psychological and social health and wellbeing	takes into account, under instruction, the most common lifestyles and habits that benefit health (such as physical exercise, nutrition, rest, sleep, recreation, mental health, human relations, sexual health) and is willing to promote his/her own health and endurance	takes into account the most common lifestyles and habits that benefit health, participates in activities that promote them and his/her own endurance	acts in a way that promotes his/her health, wellbeing and endurance, prevents factors that are harmful to health and justifies his/her actions with research data and experience that link together lifestyle and health
Following the method of operation that promote physical, psychological and social health and safety of the operating environment	follows the methods of operation of the organization that promote health and security but needs guidance in new situations	takes into account the factors that burden health and his/her ability to function and wants to promote healthiness and safety in his/her actions and the operating environment	considers factors that impact health and safety from different points of view and promotes the wellbeing of the community with his/her own actions
Making use of health enhancing physical activity and health care services	plans and engages in health promoting exercise under guidance and knows how to search for help from healthcare services when necessary	engages in health promoting exercise following a programme made and uses healthcare services when necessary	makes use of the possibilities of health enhancing physical activity independently to help keep up his/her ability to function and knows how to use the health care services accordingly
Prevention of injuries, first aid and ergonomic activity	recognizes possible injury risks, knows how to get and give first aid in most common situations requiring first aid and also follows ergonomic procedures in familiar situations	prevents injuries with his/her actions, knows how to get and give first aid and also follows ergonomic procedures	acts carefully and prevents injuries, knows how to get and give first aid and also follows ergonomic procedures and saving him-/herself
Possessing the knowledge base of factors promoting physical, psychological and social health and ability to function and factors preventing national diseases and harming health as well as the adverse effects of the profession	knows about the most common health hazards (such as smoking and substance abuse) and also about the most common factors that burden health and condition and about national diseases but needs guidance to search for information on health promotion.	makes use of knowledge base that promotes health and ability to function in his/her activities, knows the factors harmful to one's health as well as health hazards due to unhealthy lifestyle and is aware of possible occupational health issues.	utilises information that promotes health and ability to function in his/her activities variedly and searches for information on possible occupational health issues independently.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 3. Vocational ethics, 4. Health, safety and ability to function, 6. Sustainable development, 8. Communications and media skills, 10. Technology and information technology

In validation of prior learning general upper secondary school courses *Foundations of health* (TE1) compensates for *Health education* studies in core subjects.

5.1.9 Arts and culture, 1 credit

Objectives

Student

- ◆ understands the meaning of arts and culture in his/her own life and uses their various forms in a multi-cultural community
- ◆ participates in art and culture events, develops culture in the school community and maintains its aesthetic looks
- ◆ expresses ideas, experiences and feelings e. g. through music, dance, theatre, literature or visual arts and appreciates the ways of expression and visions of others
- ◆ observes the principles of sustainable development in his/her choice of materials and in work.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Making use of arts and culture	participates in art and culture events	fosters the culture of the school community by maintaining its aesthetic looks	renews the culture of the school community by developing its aesthetic looks

Creating a production	plans and creates a product that displays his/her thoughts, experiences and emotions under guidance, in the way that best suits him/her	plans and creates a product that displays his/her thoughts, experiences and emotions in a way that best suits him/her	plans and creates a product, production or performance that portrays and displays his/her thoughts, experiences and emotions in a way that best suits him/her
	takes into account, according to the instructions saving energy and conserving nature in use of material and in his/her work	acts in a way that conserves nature and saves energy when using materials and working	chooses the materials for his/her work in a way that it conserves nature and saves energy
Appreciation of the expression and views of the others	tells about the cultural characteristics that he/she has recognized in the expressions of the others.	gives constructive feedback on the expression and views of the others.	develops his/her own expression by appreciating the views of the others.

Key competences for lifelong learning: 2. Interaction and cooperation, 6. Sustainable development, 7. Aesthetics.

In validation of prior learning general upper secondary school courses *Me, visual images and culture* (KU1), *Environment, place and space* (KU2), *Music and me* (MU1) or *A polyphonic Finland* (MU2) compensate for *Arts and culture* studies in core subjects.

5.2 OPTIONAL MODULES

5.2.1 Optional additional modules to compulsory core subjects

Core subjects listed in Section 5.1 can be chosen as Optional additional modules to core subjects. The education provider defines their objectives, basic contents and assessment.

5.2.2 Environmental studies, 4 credits

Objectives

Student

- ♦ observes ways of working and acting that comply with the principles of sustainable development in a way they help him/her achieve and complement vocational skills
- ♦ works in an energy saving way.
- ♦ prevents waste and sorts waste appropriately and also knows the lifespan of vocationally relevant products
- ♦ works in a way that minimizes environmental risks and preserves cultural heritage.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowing the most important global, regional and local environmental problems and their proposed solutions as well as how to act according to the principles of sustainable development and responsible activity	knows the basic principles of sustainable development in his/her work	knows the challenges of sustainable development and how he/she can try to observe the principles of sustainable development at work	knows the basics of circulation of matter and flow of energy on the earth knows challenges of sustainable development and suggested solutions as well as how to act according to the principles of sustainable development in his/her work
Knowledge of vocationally essential waste management and prevention of waste	knows how to prevent waste and how to sort waste under guidance in ordinary duties	knows how to prevent waste and sorts waste according to instructions	knows how to prevent waste when designing and acquiring products and packaging and sorts waste independently

Preservation of cultural heritage in a way that complements vocational skills	recognizes the basics and significance of cultural heritage under instruction	knows how to preserve cultural heritage in his/her profession	is active in the preservation of the cultural heritage in his immediate environment and promotes it in his/her profession
Choosing eco-efficient working methods and materials as well as recognizing the life span of the key products from the point of view of vocational skills	chooses tools and materials that promote eco-efficiency under instruction	chooses tools and methods that promote eco-efficiency	chooses tools and methods that promote eco-efficiency and also recognizes their impact on the lifespan
Observing environmental legislation and acting according to environmental quality systems	work under instruction observing the essential environmental regulations in the profession	works according to the environmental regulations	acts according to the environmental regulations and foresees future changes
	work under instruction observing environmental quality system	works according to the environmental quality systems in his/her profession	participates actively in the drawing up and/or development of the environmental quality system at the workplace
Obtaining and using information sources essential from the point of view of acquiring vocational skills	searches under instruction for environmental information from different sources and modifies it to suit vocational needs.	sorts, compares and analyses gathered environmental information and modifies it to suit vocational needs.	sorts , compares and analyses gathered environmental information, modifies it independently and applies it in his/her work.

Key competences for lifelong learning: 1. Learning and problem solving, 3. Vocational ethics, 6. Sustainable development, 8. Communications and media skills, 10. Technology and information technology

In validation of prior learning general upper secondary school course *Environmental ecology* (B13), compensates for 1 credit of *Environmental studies* in core subjects.

5.2.3 Information and communications technology, 4 credits

Objectives

Student

- ◆ uses IT tools and systems needed in work assignments to gather, process, modify, save and present data
- ◆ adopts and applies new IT peripherals, processes and programs (if needed using helpdesk)
- ◆ works using efficient methods and procedures, such as touch typing and different mouse techniques
- ◆ uses operating systems software and makes use of applications software, such as word processing, spread sheet, email, presentation graphics and calendar software to produce, edit and present information needed in work assignments
- ◆ manages the files produced by the applications software used in their work assignments and searches for information needed in their work assignments using different search engines and applications
- ◆ uses the network communications methods and applications to send and share information for work
- ◆ observes copyright, information security and confidentiality instructions and regulations
- ◆ uses ergonomically correct working postures.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring and processing information	searches, saves and copies files needed for work assignments and also searches for information needed for work assignments from online services	knows how to use professionally relevant files and web search engines appropriately and efficiently	takes into account the technical limitations and possibilities in file management applies professionally relevant web search engines case-by-case and situation-by-situation and uses them actively and also assesses the reliability and suitability of the information gathered
Information processing and editing	uses application software in his/her work assignments, such as word processing, spreadsheet, email, presentation graphics and calendar software	uses application software efficiently to produce and edit work related data	uses application software variedly to produce and edit information according to different working situations and circumstances
Sending and sharing of information	uses web communications methods in work assignments	uses different web communications methods efficiently to send and share work related information	applies the alternatives offered web communications to the different work related situations and needs, as well as takes into account the responsibility and safety aspects concerned
Observing copyrights, information security, confidentiality and ergonomics	acts according to copyright, information and data security and ergonomics instructions and regulations.	uses ergonomically recommended ways of working.	foresees and considers information and data security risks and develops his/her working environment and methods with information and data security and ergonomics objectives in mind.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 9. Mathematics and natural sciences, 10. Technology and information technology

The qualification requirements for general upper secondary schools do not include a course that would compensate for the *Information and communications technology* studies in vocational upper secondary education.

5.2.4 Ethics, 4 credits

Objectives

Student

- ◆ ponders the meaning of values, norms and views in his/her life, personal relationships and in work
- ◆ justifies his/her choices and is able to assess their impact on human dignity, justice and sustainable development
- ◆ shows honesty and responsibility in his/her actions, respects other people and also shows good manners in his/her work and human relationships
- ◆ ponders ethical questions and problems that relate to his/her own life, relationships, society, environment and working life
- ◆ knows how to solve both alone and with other people working life related value and norm contradictions in the field of forestry in an ethically acceptable way
- ◆ acts ethically in different contradictory and crisis situations
- ◆ has the readiness to participate in the development of value base and ethical principles in the field of forestry
- ◆ gathers information on the vocation ethical value base of the field of forestry and other vocational fields and understands and uses it as a vocational resource at work
- ◆ observes and recognizes ethical problems in the field of forestry, processes them and presents justified views on them.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Pondering ethical questions	discusses values related to his/her own life and relationships under instruction and talks about ethical and world view questions	discusses ethical, world view questions as well as questions and values related to his/her own life and human relations	ponders the significance of values, norms and different world views in his/her own life, in relationships between other people and in working life and society as a whole
Ethical actions	observes good manners and responsibilities at work and in its problem situations but need support and instruction in new situations	acts responsibly and ethically at work and in working life contradiction and crisis situations	acts independently, responsibly and ethically in work and working life contradiction and crisis situations and knows how to justify his/her actions
Acquiring information and using ethic knowledge base at work	searches for information on ethical questions in his/her vocational field under instruction and uses knowledge base in familiar situations	searches for information on vocationally ethical knowledge base of his/her own and other fields and uses it in his/her own life and work	actively acquires information on vocationally ethical knowledge base of his/her own and other fields and uses it as a professional resource
			justifies his/her choices and wants to participate in the development of the ethical principles and value basis his/her own field
Processing value and norm contradictions at work	knows how to detect ethical problem situations in his/her profession and solves work related value and norm contradictions ethically together with members of the community.	recognizes ethical problem situations in his/her profession and searches for solutions to these problems together with others and also assesses the impact of the solution from the point-of-view of the key parties.	recognizes independently the ethical problem situations in working life and in his/her own vocational field, knows how to solve them ethically and assess their impact on the basis of human dignity, justice and sustainable development.

Key competences for lifelong learning: 1. Learning and problem solving, 3. Vocational ethics, 6. Sustainable development, 8. Communications and media skills, 10. Technology and information technology

In validation of prior learning general upper secondary school courses *Introduction into philosophical thinking* (FI1) and one of the following entities a) *Nature and significance of religion* (UE1), *The church, culture and society* (UE2) and *Human life and ethics* (UE3), or b) *The Orthodox world* (UO1), *Dogmatics and ethics* (UO2), and *Biblical studies* (UO3) or c) *A good life* (ET1), *The world view* (ET2) and *Individual and community* (ET3) compensate for *Ethics* studies in core subjects.

5.2.5 Cultural knowledge, 4 credits

Objectives

Student

- ◆ gets along with people representing different cultures
- ◆ knows how to greet and receive visitors and talk to them
- ◆ is able to observe the limits of appropriateness in his/her activities, the different roles of men and women, the instructions on dressing and behaviour as well as the unwritten rules and procedures
- ◆ recognizes cultural differences in workplace behaviour and hierarchy in work related public relations in the field of forestry and behaves accordingly in normal work situations, especially in customer service
- ◆ describes his/her country's common cultural features to representatives of other cultures: such as essential history, sights, arts, sports achievements and entertainment and also skills, working practices and innovations in the field of forestry
- ◆ ponders the interpretations of historical events in different countries and scales the meaningful events and eras of his/her native region and home country against the history of the neighbouring countries and the world
- ◆ compares the key cultural flows and icons in his/her country and Europe
- ◆ recognizes the special features of the field of forestry in other countries.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Taking into account the most common cultural features	recognises general features of other cultures	recognizes cultural differences in other people's activities	takes into account the cultural background of the people he/she meets
Behaviour and dress code in different situations and meeting different people	recognises cultural differences in people's day-to-day activities in Finland and elsewhere	works together with other people despite cultural differences	meets foreign co-workers, clients and visitors without cultural conflicts
Taking into account the special features in one's vocational field	recognizes the features of services and products in his/her field in different countries	compares the features of his/her culture to those in other cultures	takes into account the features of other cultures in his/her actions
Behaving according to organisation environment and duties	recognizes the key factors in his/her work	tells foreign visitors essential things about Finland and his/her work	develops his/her own organisation based on the experiences he/she received from others
Taking essential cultural history and present situation of the immigrants and other minority cultures into account	searches for information on the backgrounds of immigrants and other minority cultures	takes others into account while working despite their ethnic background, language, disability or age	takes others into account while planning his/her work and working despite their ethnic background, language, disability or age
Making use of language skills and cultural knowledge	uses the language skills acquired in familiar situations.	uses the language skills acquired in international interaction situations.	works in international connections using his/her language skills.

Key competences for lifelong learning: 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

The qualification requirements for general upper secondary schools do not include a course that would compensate for the *Cultural knowledge* studies in vocational upper secondary education.

5.2.6 Psychology, 4 credits

Objectives

Student

- ◆ observes and understands widely man and the factors affecting his activities
- ◆ recognizes, acknowledges and processes psychic phenomena with the help of psychological knowledge and concepts
- ◆ applies psychological knowledge to work assignments in the field of forestry
- ◆ applies the psychology of learning to his/her own studies
- ◆ knows how to observe and think critically
- ◆ knows how to observe the impact of feelings in different interaction and group situations
- ◆ explains his/her behaviour and that of others using psychological and social psychological knowledge
- ◆ knows how to act in a way that promotes his/her psychological wellbeing and coping with duties in the vocational field
- ◆ performs well in customer service and group work situations in the field of forestry.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of psychological concepts and explaining and understanding human behaviour	knows the common concepts of psychology and understands their connection to human behaviour	uses psychological information to explain human behaviour in common everyday and working life situations	is able to apply his/her knowledge of cognitive psychology and personality psychology to common working life situations and is able to explain his/her behaviour and the behaviour of others through them

Knowledge of the development of human psyche	knows the psychological, biological and social factors that form the basis for individual psychological development	understands the inter-relations of the factors forming the foundations for psychological development in different phases of life and at different ages	understands the possible problems of psychological development and understands the development can be influenced
Learning and self-awareness	knows key factors that affect the learning situation	assesses his/her own learning, under instruction relying on psychological knowledge	understands the learning process through psychological knowledge and applies it in his/her studies
Understanding the effect of motivation, feelings and commitment on his/her work performance and that of others	takes the significance of motivation, feelings and commitment into account in his/her own performance	works with different people in his/her work and study community and understands the significance of motivation and commitment on performance	applies basic psychological knowledge of human thinking, observation, personality features, feelings and other mechanisms regulating behaviour
		understands the impacts of committing to work and indentifying oneself with the group on work performances and coping at work	uses psychological knowledge to improve his/her self-knowledge and self-image
			acknowledges his/her own feelings and those of others and also controls his/her feelings and attitude in working life accordingly
Maintaining psychological capability to work and functioning	promotes his/her psychological capability to work and function under instruction	knows how to maintain psychological well-being and contributes to the well-being of the workplace	acknowledges the psychological factors that affect his/her own endurance and stress management and also knows how to influence them in a way that promotes his/her endurance
		understands the complexity of defining mental health	knows how to get help in his/her own mental health questions or those of persons in his/her immediate family
Acting in human relationship and interactive situations in the workplace	applies the most essential psychological knowledge when acting in common workplace customer service and interactive situations	knows the significance of social interaction and culture in psychological human behaviour and recognizes different methods of leadership and their influence on the work culture	works cooperatively in different roles and understands the meaning of leadership
Knowledge of the social aspect of socio- psychological information	knows the key concepts of social psychology.	understands the effect of the roles, norms and group dynamics in different social groups.	understands the behaviour of people from different social and cultural backgrounds through social psychology.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 3. Health, safety and ability to function.

In validation of prior learning general upper secondary school courses *Mental activity, learning and interaction* (PS1) compensates for one credit of *Psychology* studies in core subjects. If the student has also completed *Human psychological development* (PS2), *Motivation, emotions and higher-level cognitive activity* (PS4) and *Personality and mental health* (PS5), they compensate for *Psychology* studies in core subjects.

5.2.7 Entrepreneurship, 4 credits

Objectives

Student

- ◆ develops business idea or productises his/her own knowhow into entrepreneurship
- ◆ assesses the development needs based on changes in operating environment, customers' needs, competition, working environment and his/her own expertise
- ◆ follows the principles of profitable business operations in his/her entrepreneurship and also takes into account the cost structure of the operation and the impact his/her own work input has on profitability.

Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Developing a business idea or productising one's own skills	develops a business idea as a member of a group or productises his/her own expertise under instruction	develops a business idea as a member of a group or productises his/her own expertise	develops a business idea independently or productises his/her own expertise making use of the expertise in the working community
	defines procedures, central services or products related to his/her business operations under instruction	finds out about operational or business ideas related to his/her business operations and key services and products working in a group	finds out about the operational or business ideas of different companies or organisations and key services and products related to business activities
	acquires under instruction information on product or service development needs based on e.g. changes in operating environment, customer needs, competition or company expertise	acquires information on product or service development needs based on e.g. changes in operating environment, customer needs, competition or company expertise working in a group	acquires independently information on product or service development needs based on e.g. changes in operating environment, customer needs, competition or company expertise
	surveys different alternative solutions under instruction	surveys different alternative solutions	surveys different alternative solutions independently
	compares different options under instruction	in his/her work compares options and sets quality and cost objectives that take sustainable development into account	in his/her work compares options and sets quality and cost objectives that take sustainable development into account
		presents the alternatives to e. g. an expert, the foreman or clients	presents the alternatives he/she considers the best e. g. to an expert, the foreman or clients and negotiates on them
Planning business activities	chooses the alternative to be carried out under instruction and draws up an operation plan for it that contains the key information on execution	chooses the option that is to be executed cooperatively and derives an operation plan for it that contains the basic information about the execution	chooses or agrees on the viable alternative and draws up an operation plan for it that contains the key information on execution
	talks about the plan and makes the changes agreed on	presents the plan and changes it based on feedback received	presents the plan and develops it based on feedback received

Executing development projects or business activities	executes the operation plan drawn up under instruction	executes the operation plan drawn up	executes independently the operation plan drawn up
	adopts usual working methods, tools and materials required for the operation plan under instruction using information technology	adopts usual working methods, tools and materials required for the operation plan using information technology	uses work methods, tools and materials required for the operation plan in interaction with his/her working community using information technology
	works with experts under instruction in different stages of the activities	works with experts in different stages of the activities	uses expert networks in different stages of the activities
	works in the enterprise observing safety instructions and agreed principles of sustainable development	works in the corporation observing safety instructions and agreed principles of sustainable development	works in the corporation observing safety instructions and especially the principles of quality and sustainable development
Assessment of the execution of one's own activities, projects or business operations	assesses the progress of his/her own activities and business operations under instruction	assesses the progress of his/her own activities and business operations	assesses the progress of his/her own activities and business operations against the objectives set
	makes the changes agreed on	agrees on possible changes	makes justified change or improvement suggestions and agrees on their execution
Presenting of a development project or business operations	presents the execution phase and its results under instruction	presents the execution phase and its results	presents his/her whole development project or business operations and its results in a way that fits the nature of the project
Success and overall profitability of activities	works under instruction in his/her work or business activities observing profitability	works or runs his/her business operations observing profitability	works, acts in a working community or runs his/her business operations observing profitability
	calculates the share of the cost accumulated by his/her own work input.	calculates the costs of the activities and the share accumulated by his/her own work input.	works cost-efficiently while considering time and other available resources and also calculates the costs of the operation and the share accumulated by his/her own work input.

Key competences for lifelong learning: 1. Learning and problem solving, 2. Interaction and cooperation, 5. Initiative and entrepreneurship, 6. Sustainable development, 10. Technology and information technology

The qualification requirements for general upper secondary schools do not include a course that would compensate for *Entrepreneurship* studies in vocational upper secondary education.



6

FREE CHOICE MODULES IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING, 10 CREDITS

A student is to include 10 credits of free choice modules into his/her studies, the objectives and assessment of which are to be included in the student's personal study plan.

Free choice modules can be vocational studies in one's own or other vocational fields, or core subjects, general upper secondary studies or studies preparing for the matriculation examination or further studies, working experience or guided hobbies, which support the general and vocational training objectives and the growth of the student's personality.

7

STUDENT ASSESSMENT IN CURRICULUM-BASED VOCATIONAL UPPER SECONDARY EDUCATION AND TRAINING

7.1 TASKS AND OBJECTIVES OF ASSESSMENT

In addition to what the Act on Changing the Act on Vocational Education and Training (Act 601/2005, section 25) stipulates, assessment is used to guide, motivate and encourage a student to reach the objectives and support him/her to develop a positive self-image and grow as a professional. In addition to guiding and supporting, the student assessment is to produce information on students' competence for the student him-/herself, the teacher and employer as well as for possible applying for further studies.

7.2 INFORMING ABOUT ASSESSMENT

The implementation of student assessment forms an entity, in which the education provider must include in its curriculum a plan on how to assess the various qualification modules. It includes a plan on the implementation and assessment of skills demonstrations approved by the local board for vocational skills demonstrations (Act 601/2005, section 25 a).

Before the studies begin, the students and all those taking part in the assessment process must be informed of the assessment principles and how they are to be applied (Decree 603/2005, section 3). The matters to be informed are at least the tasks and objectives of assessment, recognition and validation of prior learning, assessment of learning and competence including on-the-job learning and skills demonstrations, targets and criteria of assessment, deciding on the grade, reassessment process and improving the grades, rectification of assessment and receiving a qualification certificate.

7.3 RECOGNITION AND VALIDATION OF A STUDENT'S PRIOR LEARNING

The education provider is to inform the student of what kind of material and documents must be presented for the recognition of prior learning and when the student must apply for recognition of prior learning (Decree 603/2005, section 3).

Recognition of prior learning

In addition to what the Government Decree on amending the Decree on Vocational Education and Training (Decree 603/ 2005, section 10 (1) stipulates, a student's competence must be assessed as early as at the beginning of the studies. The student's competence and its level must be investigated for the identification of his/her strengths and for the recognition of prior learning. Recognition of prior learning forms the basis when setting his/her personal objectives, but also to be able to determine the amount of guidance and support needed.

Recognition of prior learning calls for an assessment discussion in which the student and teacher or teachers participate. To promote recognition of prior learning different facilitating assessment methods must be developed.

Validation of prior learning

In addition to what the Act on Amending the Act on Vocational Education and Training and the Decree on Amending the Decree on Vocational Education and Training stipulate (Act 601/2005, section 30, Decree 603/ 2005, section 12 a), recognition on prior learning is to prevent overlapping studies and shorten the study time.

If the recognition process shows that the objectives set for the module in question, or part thereof, have been reached, such prior learning is validated. Validation of prior learning is recorded in the student's personal study plan. More detailed information on personal study plan in Chapter 8.1.

Validation of prior learning is part of student assessment and it is subject to the same statutes as other forms of assessment (Act 601/2005, sections 25, 25a and 25c). Studies in the qualification to be completed can be substituted or accredited by validation of prior learning. The modules substituted by the validation of prior learning are marked in the qualification certificate (Chapter 7.9). The teacher or teachers in charge of the studies in question decide on the validation of prior learning. No general time limit can be set before which the acquired competence could not be validated, but the validity of the competence can be checked. If necessary the

student must demonstrate the correspondence of his/her competence with the skills requirements and objectives of the qualification concerned.

The studies assessed in another qualification certificate or general upper secondary school certificate compensate for corresponding core subjects as well as free choice modules and the optional modules included in vocational modules, a total of 40 credits at most. Recognition of individual general upper secondary school courses into core subjects is regulated in Chapter 5.

If there is no grade for the competence that covers a complete module and has been achieved through earlier studies or in another way, such competence must be demonstrated to receive a grade for the qualification certificate. Skills demonstrations are used to show evidence of competence in vocational qualification modules. In further and specialist vocational qualifications the grade “approved” awarded by the qualification committee is marked in the qualification certificate for the recognised module.

The grades of qualification modules which are substituted through recognition and validation can be raised during training. After the training is completed such improvement of grades is done as a private student.

Conversion of grades

The grade scale is valid in a way that is stipulated in the Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 10). A student is assessed based on the assessment practices prevailing in the institute, where he/she currently pursues his/her studies. If the grade scales differ from one institute to another, the institute performing the recognition must convert the grades and determine their correspondence in the student’s favour. The grades are to be converted as follows:

GRADE SCALE		
1–3	1–5	5–10
excellent 3	excellent 5	excellent 10
		excellent 9
good 2	good 4	good 8
	good 3	satisfactory 7
satisfactory 1	satisfactory 2	fair 6
	satisfactory 1	pass 5

7.4 ASSESSMENT OF LEARNING AND COMPETENCE

Student assessment is criteria based, which is to say that a student's learning and competence is always compared to either the skills requirements of vocational qualification modules or the objectives of core subjects as well as the assessment criteria based on them.

A student has the right to learn before the competence described in the skills requirements and the learning objectives are assessed to obtain a grade in the qualification certificate.

Assessment of learning

The objective of assessment of learning is that the student knows what he/she knows and what there is still to learn. When performing assessment of learning, the teacher and workplace instructor must use methods that motivate and activate the student. They are used to support and motivate the student to reach the skills requirements or objectives as well as to develop his/her self-assessment skills. The student assesses his/her learning based on the skills requirements, objectives and assessment criteria of the module.

Learning is assessed during the whole training period or duration of studies by giving the student oral or written feedback on the progress of learning. Numerical assessment is not needed when assessing learning. Feedback is used to support and guide the student to achieve the best possible performance by bringing out the student's strengths. Assessment of learning is used as a basis to make the necessary changes in the student's tuition and learning support. The changes are recorded in the personal study plan.

Assessment of competence

The student receives the grades shown in the qualification certificate based on assessment of competence using the assessment scale prescribed in the valid Decree on Vocational Education and Training.

When competence is being assessed, the assessment methods are chosen so that they measure reaching the skills requirements and objectives set, suit the study methods used and support the student's learning process. The students must have an opportunity to show his/her competence in various ways and also assess his/her competence him-/herself.

Skills in vocational modules are assessed using a skills demonstration and other ways of assessing competence. A skills demonstration is used to assess the competence determined in vocational skills requirements as widely as possible but at least what the qualification requirements state. If necessary, other forms of competence assessment supplements the competence necessitated by skills requirements. The education provider decides on the other methods to assess competence in its assessment implementation plan.

Skills demonstrations

In addition to what the Act on Amending the Act on Vocational Education and Training and Decree on Amending the Decree on Vocational Education and Training (Act 601/2005, sections 25, 25a and 25b, Decree 603/2005, section 5) stipulate on skills demonstrations, local board for vocational skills demonstrations, assessment and assessors, quality of skills demonstration venues and occupational safety, the skills demonstrations are planned, implemented and assessed in cooperation between the institute and the workplace based on the qualification requirements.

In a skills demonstration the skills requirements of vocational qualification modules are demonstrated as stated in Chapter 4. A skills demonstration is given in all the vocational qualification modules, optional modules included, if they are vocational modules. In core subjects and free choice modules skills demonstrations are not arranged. However, the education provider can decide that a skills demonstration is arranged in free choice modules if they are vocational modules.

A grade for a skills demonstration is given for all the vocational modules. A skills demonstration can be given in one or more modules at a time. If competence in more than one module is assessed in one and the same skills demonstration, a separate grade must be given for each module as per target of assessment set. If a skills demonstration for a qualification module is given in more than one parts, a grade is given for each part as per target of assessment, but an overall grade is not formed until all the parts have been completed.

Skills demonstrations are placed along the duration of the studies. The student must have an opportunity to acquire the competence to be assessed in the skills demonstration before the demonstration is arranged and improve his/her performance based on the feedback received on the demonstrations. The principles of coordinating on-the-job learning and skills demonstrations are listed in the skills demonstration implementation and assessment plan, which the local board for vocational skills demonstrations approves.

A student is also allowed to give skills demonstrations abroad, which must be agreed on in advance.

The education provider ensures that the student receives sufficient support and guidance to give a skills demonstration. Support and guidance are given before skills demonstrations, during them as well as in the form of constructive feedback after them.

Targets and criteria of assessment

The targets of assessment (what is assessed) and assessment criteria (level of competence) are stated in the qualification requirements module by module for levels: Satisfactory 1, Good 2 and Excellent 3. Assessment focuses on

- ◆ mastering the work process
- ◆ mastering the work methods, equipment and material
- ◆ underpinning knowledge
- ◆ mastering the key competences for lifelong learning.

Key competences for lifelong learning are learning and problem solving, interaction and cooperation, vocational ethics, health, safety and ability to function, initiative and entrepreneurship, sustainable development, aesthetics, communication and media skills, mathematics and natural sciences, technology and information technology, active citizenship and different cultures.

In the targets of assessment Key competences for lifelong learning, the following four key competences are assessed: learning and problem solving, interaction and cooperation, vocational ethics together with health, safety and ability to function. Other key competences are assessed in connection with the work process, work methods, equipment and material or underpinning knowledge.

Education provider draws up the assessment criteria based on the general assessment criteria given in Chapter 9.3 for the optional modules for which they have not been prescribed in the qualification requirements.

7.5 DECIDING ON THE GRADE

In addition to what the Act on Amending the Act on Vocational Education and Training and Decree on Amending the Decree on Vocational Education and Training stipulate (Act 601/2005, section 25 b, Decree 603/2005, section 11, Decree 488/2008, sections 10 and 13) stipulate, grades must be given on all the modules

in compliance with the qualification requirements, including the other optional modules and vocational competence enhancing modules included in the vocational studies (90 credits).

The grade to be awarded for a module is decided based on assessment of competence. If there have been several teachers assessing the competence, a decision is taken during an assessment discussion. A skills demonstration grade is mainly decided by teachers and working life representatives together according to the decision taken by the local board for vocational skills demonstrations. The grounds for assessment must always be recorded.

7.6 STORING ASSESSMENT MATERIAL

In addition to what the Decree on Amending the Decree on Vocational Education and Training (Decree 603/2005, section 11a) stipulates on storing assessment material, the grade given on a skills demonstration is stored as per target of assessment. If the skills demonstration taken by the student covers only a part of the module, the material on which the assessment of each part is based, must be stored so that it is possible to decide on a skills demonstration grade for the whole module.

7.7 REASSESSMENT AND IMPROVING THE GRADE

The Decree on Amending the Decree on Vocational Education and Training (Decree 603/2005, section 12) stipulates on reassessment and improving of grades.

7.8 RECTIFICATION OF ASSESSMENT

The Act on Amending the Act on Vocational Education and Training (Decree 601/2005, section 25c) stipulates on rectification of assessment.

7.9 CERTIFICATES

Qualification certificates

A qualification certificate is an official document, whose contents are to follow the qualification requirements. The Decree on Amending the Decree on Vocational

Education and Training stipulates on awarding a qualification certificate (Decree 488/2008, section 13). A qualification certificate must be awarded in apprenticeship training arranged as vocational upper secondary education and training.

A qualification certificate is an entity that comprises a vocational upper secondary certificate and skills demonstration certificate. A vocational upper secondary certificate contains grades on all the modules the qualification comprises. In the vocational upper secondary certificate The Driver Certificate of Professional Competence (Driver CPC) certifying the initial qualification in transport sector is marked as: See skills demonstration certificate. Only free choice modules can be left without a grade at student's option. In the vocational upper secondary certificate the module grades are based on assessment of the skills demonstration and other competence. Skills demonstrations must be passed in order for a grade to be given on the module for the vocational upper secondary certificate.

Separate grades are given for the core subjects determined by the Government. Competence achieved by core subjects included in vocational modules is assessed as vocational module skills requirements.

The Final Project is assessed in connection with the modules it is included in. Its scope and name are marked in the vocational upper secondary certificate, no separate grade is given. As to on-the-job learning the vocational upper secondary certificate gives its extent but no separate grade is given, because the competence acquired during on-the-job learning is assessed with skills demonstrations.

Studies compensating for a module or competence acquired in some other way are marked in the student's vocational upper secondary certificate with their grades. If the grade scales differ the conversion table given in Chapter 7.3 is used. For a module recognised from a further or specialist vocational qualification the grade to be marked in the certificate is "approved" and a footnote is used to show that it was completed as a competence-based qualification, for which the qualification committee concerned has awarded a certificate.

Skills demonstrations covering a whole module given previously are marked with their grades and short descriptions in the skills demonstration certificate. The certificate is also to provide the name of the institute that performed the assessment.

If recognition of prior learning is done for studies in a qualification that has not included skills demonstrations, the skills demonstration certificate is to bear the name and scope of the module together with a footnote to state that prior learning has been recognised from a qualification that has not included skills demonstrations. When prior learning is recognised from further or specialist vocational qualifications, the skills demonstration certificate is to bear the name and scope of the qualification together with a footnote to state that prior learning has been recogn-

ised from further or specialist vocational qualification X, for which the qualification committee in question has awarded a certificate.

When vocational modules (90 credits) include core subjects or general upper secondary studies in compliance with Government resolution (216/2001), the skills demonstration certificate is to bear the footnote: "Student has included x credits of core subjects, which are not assessed with skills demonstrations".

The qualification certificate must show that it consists of the vocational upper secondary certificate and skills demonstration certificate. The qualification certificate must also bear the name of the education provider or the institute awarding the certificate or both. A vocational upper secondary certificate is signed by the education provider and a skills demonstration certificate by the chairman of the local board for vocational skills demonstrations (Decree 488/2008).

Vocational upper secondary certificate is to provide the following information:

- ◆ student's name and personal identity code
- ◆ name of qualification and its scope 120 credits /3 years
- ◆ name of study programme
- ◆ qualification title according to Ministry of Education Decree
- ◆ modules completed grouped into vocational modules (90 credits), core subjects (20 credits) and free choice modules (10 credits), their scope and grades
- ◆ name and scope of Final Project
- ◆ scope of on-the-job learning
- ◆ date and signatures
- ◆ stamp of education provider or school.

Skills demonstration certificate is to provide the following information:

- ◆ student's name and personal identity code
- ◆ name of qualification and its scope 120 credits /3 years
- ◆ name of study programme
- ◆ qualification title
- ◆ skills demonstrations completed by module (name and scope of module, short description of skills demonstration completed, name of skills demonstration venue, grade on skills demonstration or for special needs students a short description of student's vocational competence and skills shown in the skills demonstration.)
- ◆ date and signature (chairman of the local board for vocational skills demonstrations)
- ◆ stamp of education provider of school.

Qualification certificate is also to provide the following information:

- ◆ contact information of the education provider or institute awarding the certificate
- ◆ name of education provider or institute if not mentioned earlier
- ◆ authorization to provide education the Ministry of Education has granted
- ◆ legislation the training is based on
- ◆ mention that training has been arranged in accordance with the qualification requirements decided by National Board of Education (date of regulation and register number)
- ◆ mention that the qualification is approved by the Ministry of Education (date and number of the Government Decree in force at the time training begins)
- ◆ prerequisites for admission and national level of qualification
- ◆ eligibility for further studies the qualification provides
- ◆ definition of scope of qualification, academic year and credit
- ◆ assessment scale
- ◆ special regulations related to practising the profession

Certificate on completed training

Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates the contents of a certificate on training completed.

A certificate of completed training, qualification modules or skills demonstrations

In addition to what the Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates on awarding certificates, a student is awarded a certificate on completed modules and studies, skills demonstrations and prior learning. In addition to the grades achieved the certificate must also list participation in modules that the student has not been given a grade yet as well as information of what the student must complete to receive a qualification certificate.

When a student enters working life after completing a module or modules, the certificate is to include a supplement describing the vocational competence achieved by completing the modules in question.

Certificate of resignation

Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates on the contents of a certificate of resignation.

Qualification certificate or certificate supplement for international use

Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates on issuing a qualification certificate or certificate supplement for international use.

The Driver Certificate of Professional Competence (Driver CPC) certifying the initial qualification in transport sector

The instructions given in Ministry of Education letter (12.6.2007 No. 146/530/2007) are in force concerning Driver CPC certifying the initial qualification in transport sector.

7.10 ASSESSMENT IN SPECIAL EDUCATION

The same principles are to be applied in assessing special needs students as to other students. If a student does not reach in a module the Satisfactory 1 level objectives set in the qualification requirements, the training can be adjusted. When the skills requirements or objectives of a qualification have been adjusted based on the Act on Vocational Education and Training 630/1998, sections 20 and 21 (2 and 3), an entry must be made in the certificate. A student must receive a qualification certificate even if qualification objectives have been adjusted.

A footnote must be made in the vocational upper secondary certificate as well as the skills demonstration certificate of adjusted skills requirements or objectives. Assessment must be implemented in proportion to the adjusted skills requirements or objectives, which means assessment criteria must be drawn up for them. The education provider draws up adjusted skills requirements or objectives for the module based on the Government Decree on Vocational Education and Training 811/1998, section 8. The grade scale must be the same as the one in general use. According to Section 10 of Government Decree on Amending the Decree on Vocational Educa-

tion and Training 603/2005, when training is arranged as special education, skills demonstrations can also be assessed verbally. A student must know that training completed in accordance to adjusted skills requirements or objectives may affect application for further studies and success in them.

If a student's competence level falls considerably short of the skills requirements and objectives set, a certificate of studies completed must be awarded instead of a qualification certificate. An appendix must be issued stating what the student knows best.

7.11 ASSESSING IMMIGRANT STUDENTS AND THOSE REPRESENTING DIFFERENT LANGUAGES AND CULTURES

The competence of immigrant students and those representing different languages and cultures is to be assessed in the same way as that of other students. Competence is to be assessed by using methods which allow assessing competence despite possible lacking language skills.

A student, whose mother tongue is other than the teaching language of the institute, must have, before taking a skills demonstration, such language skills that he/she understands the instructions and orders related to the work to be completed as the skills demonstration. The need for support must be identified and support activities based on the need must be planned in cooperation with the training institute, representatives of working life and the student. If necessary persons arranging and assessing a skills demonstration must receive instruction on how cultural factors affect communication between individuals. Persons arranging and assessing the skills demonstration must also be instructed to speak clearly when giving instructions.

Assessing mother tongue

If Finnish or Swedish is not the student's mother tongue, his/her Finnish or Swedish skills must be assessed according to the objectives of Finnish or Swedish as second language, also in the case that he/she has not received separate Finnish or Swedish as second language tuition. If both the teacher and the student consider the student's Finnish or Swedish skills to be of the Finnish or Swedish, mother tongue level, competence must be assessed against Finnish or Swedish, mother tongue objectives. Vocational upper secondary certificate must state which objectives the assessment of competence is based on, however, on the scale 1–3. Student's individual study plan,

including assessment, can include both mother tongue studies above (see Chapter 8.4).

The Finnish or Swedish skills of student who use sign language are assessed based on the objectives set in Finnish or Swedish for sign language users.

Assessing second national language

If the student has not studied Swedish or Finnish as a second national language, the vocational upper secondary certificate must state what he/she has studied instead. Teaching arrangements that affect assessment are determined in Chapter 8.4.

OTHER REGULATIONS IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING

8.1 GUIDANCE AND COUNSELLING AND PERSONAL STUDY PLAN

Objectives for guidance and counselling

The objective of guidance and counselling is that the student receives enough information on his/her education and training before it starts and during it. The student is to know the modules included in the qualification, the studies and the options available. Another objective is that the student knows how to act in the educational institute community, knows how to develop his/her learning and interaction skills and self-knowledge as well as to assess his/her own activities and productions. He/She is able to plan his/her studies, draw up a personal study plan together with the teacher and assume responsibility for the studies. He/She knows how to follow the accumulation of credits and search for help to plan his/her studies.

The student is able to make choices and decisions concerning studies and life career. He/She recognizes possible problems related to his/her studies and life situation and know where to find support in them. He/She knows how to use the student social services society offers as well as other counselling, advice and information services. Reaching the objectives is supported by the education provider's obligation to inform the guardians of a minor student on vocational education and the progress of the student's studies.

Student's right to student counselling

The qualification comprises a minimum of 1.5 credits of student counselling (Government resolution 213/1999). Counselling activities are to support the student comprehensively in the different phases of the studies. Every student has the right to receive personal and other student counselling. The student has the right to receive the support services he/she may need in studies or life situation changes.

Arranging student counselling

The objective of student counselling is to promote educational, ethnic and gender equality. Objectives also include increasing students' well-being, preventing drop-outs, promoting employment and supporting application for further studies. Education provider must pay special attention the counselling of those students who have studying or learning difficulties (e.g. dyslexia), frequent absenteeism or life management difficulties.

As part of its curriculum the education provider is to draw up a student counselling plan, which determines the tasks and division of work for those involved in the counselling process. The plan serves as a development tool for the whole institute. It states how and what kind of support a student receives by those involved in counselling. The plan presents how cooperation with different education providers has been arranged in order that the student can choose modules and studies from different study programmes and qualifications as well as plan completing more than one qualification. It also determines other cooperation outside specialists and guardians. Student welfare plan is part of the counselling plan.

All the teachers of the institute and other persons responsible for counselling take part in the counselling process. Student counsellor has the main responsibility for arranging student counselling as well as for planning and implementing the counselling entity. A teacher's task is to guide and motivate the student to complete the qualification and planning the studies. The teacher's task is also to help the student find his/her strengths and develop his/her learning skills.

Student counselling is arranged as studies related, personal, group counselling and other guidance. Student receives counselling to support his/her studies and to make choices so that he/she is able to plan the contents and structure of his/her studies in accordance with his/her resources. Student counselling promotes students' community spirit throughout the training. The students' studies and well-being are monitored and supported in cooperation with the guardians.

The education provider is to inform the pupils of comprehensive school, their guardians, student counsellors and teachers of vocational education and training and how to apply. The education provider is to direct informing and counselling especially to those young people who have not managed to secure a training place after completed basic education and to their guardians.

The education provider is to develop its career and recruitment services in cooperation with business life and employment services as well as to promote and support students finding employment and getting access to further studies.

Individual study plan

An individual study plan supports a student's career planning and develops his/her skills in self-assessment. It is based on the student planning his/her own studies, individual choices, progressing in studies and assessing learning. A student is instructed in drawing up an individual study plan and monitoring its implementation. It is a plan the student is committed and motivated to implement throughout the training.

An individual study plan is drawn up through negotiation by the student, teacher or teachers and student counsellor when needed. The plan determines the learning objectives, completing the studies, methods used and timing together with assessment of the studies. When drawing up the plan the different learning styles are considered. Possible factors that prevent learning are recognized and the student's self-direction and vocational growth are supported.

The implementation of individual study plan and the progress of studies are monitored and if necessary the student is given remedial teaching. The student and teachers assess the possible barriers to implementing the individual study plan. The student is guided to make decisions concerning his/her learning as well as redefine and change the plan as studies advance if necessary.

An individual study plan comprises the student's individual choices, advancing in studies, assessment of learning, recognition and validation of prior learning, on-the-job learning places and times together with skills demonstrations.

8.2 ON-THE-JOB LEARNING AND WORKING SAFETY

In addition to what the Decree on Vocational Education and Training (Decree 811/1998, section 5, Government Decree Amendment 603/2005, sections 3 and 5) stipulate, the following is to be considered in on-the-job learning:

On-the-job learning is part of vocational education and training. It is a mode of arranging vocational education and training, in which qualification objectives are learnt at a workplace. On-the-job learning is objective oriented, guided and assessed training that takes place in a genuine working environment. On-the-job learning periods must be sufficiently long and versatile from the point of view of mastering the profession. Only in exceptional cases a student can complete on-the-job learning at a training institution in a practice enterprise or with similar arrangements.

Cooperation between workplaces and the education provider ensures that on-the-job learning and other training corresponds with the working life, is of quality and up-to-date. The education provider's responsibility is to take care that all the

partners in the area have the same view on arranging on-the-job learning. The education provider must see that the student receives sufficient counselling and training during on-the-job learning and that the teacher and other staff members have the resources to cooperate with working life. The education provider and teachers must together with working and business life ensure the quality of on-the-job learning so that the student achieves the skills requirements given in the qualification requirements.

The education provider is responsible for the implementation of on-the-job learning. Implementation includes planning, student counselling and assessment. The education provider must also see to the teachers' working life competence and training as well as training workplace instructors. At the workplace special attention is paid to guiding the student and giving feedback.

Usually the student does not sign a contract of employment with the employer for an on-the-job learning period and he/she is not paid wages or a salary. During an on-the-job learning period a student is entitled to receiving student financial aid and student social benefits in accordance with separate instructions. When on-the-job learning is arranged abroad, local regulations are also taken into consideration.

In addition to what the Act on Vocational Education and Training (Act 630/1998, sections 19 and 28) and the working safety regulations in force stipulate, the following is to be considered in working safety questions:

The agreement on training and skills demonstrations to be arranged at the workplace in connection with practical work assignments is to include the responsibilities related to safety, injuries and damages and insurances. Before starting the work, the employer and education provider ensure together that the student has the resources to do the work in question safely and without risking his/her health and by following the instructions given.

The regulations concerning the employer according to the Occupational Safety and Health Act Section 4 (1) are applied to the education provider when the work takes place at the institute or otherwise in the way determined by the education provider.

Student assessment during on-the-job learning period is described in Chapter 7.

8.3 VOCATIONAL SPECIAL EDUCATION

For equality in education to come true each student must have equal opportunities to pursue vocational studies and find employment after training and assume the role of an independent citizen in society disregarding their different learning capabilities.

The vocational education and training of a special needs student must be arranged in view of the equality principle primarily in ordinary vocational institutes in the same study groups with other students. Education and training can also be provided partly or completely in special groups. Vocational special education institutions primarily provide training for severely handicapped as well as preparatory and rehabilitative training and counselling. They are also to offer expert help to other training institutions. Vocational special education can also be provided as apprenticeship training.

Students who are in need of special teaching arrangements or student social services due to disability, illness, delayed development, emotional disorder or some other reason must receive special education. It ensures learning that is based on individual resources, self development and growth as a person. If necessary other support services and rehabilitation in cooperation with rehabilitation service suppliers are added to special education.

The education provider determines the principles of special education: objectives, implementation, teaching methods, support and special services, expert services, social partners and responsibilities. The institution must reserve sufficient resources for special education. Promoting special needs students' learning is everyone's task in the institution.

Need for special education must be determined based on the Act on Vocational Education and Training Section 20 and qualification requirements for each student individually. Reaching the objectives must be supported with the help of an individually designed and guided learning process and different support activities.

Individual educational plan (IEP)

A written individual educational plan (IEP) must always be drawn up for a student in need of special education (Act 630/1998, section 20). The plan is to include (Decree 811/1998, section 8)

- ◆ qualification to be completed
- ◆ qualification requirements used in teaching
- ◆ scope of qualification
- ◆ individual study plan drawn up for the student
- ◆ special teaching and student social services the student receives
- ◆ other personal services and support activities as well as
- ◆ criteria for special education

An IEP is to be drawn up together with the student, when necessary his/her guardian, representatives of previous school as well as teachers and student service specialists.

If vocational skills requirements have been adjusted, the personal study plan is to include a personal curriculum, which determines the student's learning objectives. They are based on the requirements of the qualification the student aim for. Vocational special education must be planned so that the student reaches as extensively as possible the same competence as in other vocational education. The objectives can be adjusted according to the student's resources either so that all the learning objectives are adjusted or only those of one or more modules. Teaching must focus on supporting the student's strengths so that he/she is ensured good opportunities to find employment. Special attention must be paid to achieving working confidence during on-the-job learning periods. The student must be explained how he/she can get the special services required after the training has been completed.

Student's progress must be monitored during training and the personal objectives and support activities changed as needed. Regulations on assessing special needs students are to be found in Chapter 7.10.

8.4 TEACHING IMMIGRANTS AND REPRESENTATIVES OF DIFFERENT LANGUAGE AND CULTURAL GROUPS

General

The skills requirements for immigrant students and students belonging to other language and culture groups, such as Saami, Romany and sign language students, are in the main the same as for other students. The requirements for vocational upper secondary qualification are applied to teaching.

Students, whose mother tongue is other than the language of teaching at the institution, must receive support particularly in language studies and through special teaching arrangements. If necessary the students' background, like mother tongue, culture and the language skills developing during the training, must be observed. Teaching arrangements are made to support students' own lingual identity along side with the majority language and culture. The education provider's curriculum is to comprise the implementation immigrants' and other language and culture group students' teaching arrangements.

Immigrants

In this connection immigrants are taken to mean students who have moved to Finland or were born in Finland but have an immigrant background. If necessary the reason for immigration, time spent in the country and developing Finnish skills are taken into consideration in teaching. The studies support the student's growth into an active and balanced member of both his/her own language and cultural community and Finnish society.

Saami speakers

Saami language teaching started in basic education is continued when possible in vocational education and training. Saami language training can be provided in Northern Sami, Inari Sami and Skolt Sami. Saami can be studied as mother tongue although education would not otherwise be provided in Saami.

Romanies

Teaching Romanies is done taking in to consideration the position of Finnish Romanies as an ethnic and cultural minority. Romany culture is considered in teaching arrangements. Romany language training is arranged as possible in cooperation with other education providers.

Sign language users

The requirements for vocational upper secondary qualification are applied to sign language culture and communication in sign language students' teaching and learning. Finnish or Swedish are used as reading and writing language alongside with sign language. Sign language teaching is planned so that it is possible for the student to act with an interpreter. Sign language users and hearing-impaired students' opportunities to communicate naturally are to be taken into consideration in learning environments.

Language teaching arrangements

The following teaching arrangements, which are in compliance with Government resolution (VnP 213/1999), can be applied to immigrants', Saami and Romany speakers' and sign language users' language studies (mother tongue, second national language, foreign language), if their mother tongue is other than Finnish or Swedish.

Mother tongue

If the student's mother tongue is other than Finnish or Swedish, the education provider can divide the compulsory modules in mother tongue and second national language differently from the stipulations of the Act on Vocational Education Section 12 (2).

The credits reserved for mother tongue and second national language (4 + 1 = 5 credits) can be combined and divided flexibly in possible student's own mother tongue studies, Finnish or Swedish as second language studies and second national language studies. Finnish or Swedish as second language means a language that has been learnt after the mother tongue in a Finnish language environment. A separate Finnish or Swedish for sign language user module (Chapter 5) has been drawn up for sign language students.

Students can study Finnish or Swedish either

- 1) in accordance with Finnish or Swedish as second language objectives (Chapter 5) or
- 2) in accordance with Mother tongue, Finnish or Swedish objectives (Chapter 5), if the student's Finnish or Swedish skills are assessed to be of mother tongue level.

A student, whose Finnish or Swedish skills are not of mother tongue level on all the area of language skills, studies according to Finnish or Swedish as second language objectives and contents. His/Her Finnish or Swedish language competence is assessed according to these objectives whether or not the education provider has offered Finnish or Swedish as second language teaching. Education provider can offer and student's study plan may include both of the above mentioned studies. A student can change in the middle of his/her Finnish or Swedish as second language studies over to studying Finnish or Swedish according to Mother tongue, Finnish or Swedish objectives.

A student must be offered his/her mother tongue studies when possible. As a mother tongue as student can choose to study also Romany, sign language or some other mother tongue (Act 630/1998, section 12 (3)). The immigrants' own mother tongue objectives are given in Chapter 5. A student can study his/her own mother tongue in accordance with the objectives of either Mother tongue, own mother tongue for foreign students (4 credits) or Foreign language (2 credits) or as free choice studies.

If a student studies his/her mother tongue according to the objectives of Own mother tongue for foreign students, his/her studies are to include Finnish or Swedish language studies.

Second national language

The students' second national language (Swedish or Finnish) teaching is arranged in accordance with the objectives of second national language taking into consideration the level of the students' language skills.

Foreign students can also replace second national language studies with their own mother tongue or Finnish or Swedish language studies (5 credits), Chapter 5. If necessary the teaching can be arranged as basics in second national language depending on the needs of the student and the vocational field.

Foreign language

A student's studies must also include foreign language studies. The foreign language of a student, whose mother tongue is other than Finnish or Swedish, can also be his/her mother tongue.

8.5 APPRENTICESHIP TRAINING

Apprenticeship training is regulated by the stipulations of the Act on Vocational Education and Training (Act 630/1998, sections 8 and 17), the Decree on Vocational Education and Training (Decree 811/1998, sections 6 and 7) and the Act on the Financing of the Provision of Education and Culture (635/1998).

The valid qualification requirements (national core curriculum and qualification Requirements of competence-based qualifications) are applied to apprenticeship training arranged as curriculum-based vocational education and training.

The education provider issues a qualification certificate in accordance with the qualification requirements for a qualification taken in vocational upper secondary education in accordance with the regulations of Chapter 7.9.

8.6 COOPERATION BETWEEN HOME AND EDUCATIONAL INSTITUTION

In addition to what the Act on Vocational Education and Training (Act 630/1998, sections 5 and 14) stipulates, the following is to be observed when arranging cooperation between home and educational institution:

In education and training offered to the young the education provider and the educational institution must take the initiative and maintain cooperation with a student's parents or guardians. Cooperation between home and institution is arranged so that it enhances student's independence and responsibility, advances studies and offers support in matters related to student's health, security and wellbeing. The individual needs of special needs students and students with different language and cultural backgrounds are to be taken into consideration in the cooperation.

The education provider and the guardians must cooperate in student counselling both during and at the end of studies. Counselling must support the students' transition to working life or further studies and enhance students' life management skills.

The part of the curriculum dealing with cooperation between home and educational institution is to be drawn up in cooperation with the authorities in charge of the implementation of social and healthcare in the home municipality of the educational institution.

8.7 STUDENT WELFARE SERVICES

In addition to what the Act on Vocational Education and Training (Act 630/1998, Sections 14, 28 and 37 a) stipulates on implementation of student welfare services and student's right to a safe learning environment, the following is to be observed:

The objective of student welfare services is to create a safe and healthy learning environment and promote the community spirit of the educational institution, wellbeing and pleasantness. The objective is to support the student and maintain the institution community's ability to function in situations threatening physical and psychological safety. Student welfare services are to promote early recognition of learning difficulties and other problems and prevent school drop-outs. In the case of minor students the education provider must cooperate with the guardians.

The education provider is to ensure the achievement of the objectives of student welfare services by issuing in its curriculum operating instructions which promote students' health and safety together with prevention and early recognition of different problems. Education provider is to issue instructions on attending to such activities of the educational institution as student's participation in training, monitoring the progress of studies and staying at the school dormitory. Preventive instructions are to be issued on smoking, use of substances, school bullying and disturbing. The education provider must have a crisis plan and instructions in case of disturbing behaviour, violence, injuries, accidents and deaths.

The education provider must monitor the outcome of the student welfare services and take necessary action. Students are to be encouraged to take part in and contribute to promoting wellbeing in their own school community. All those working with the students in the school community are responsible for student welfare services. The duties of multi-professional student welfare staff include coordinating and developing student welfare services.

The part in the curriculum dealing with student welfare services is to be drawn up in cooperation with the authorities and other parties attending to the implementation of social and welfare matters in the municipality or municipalities the institution operates in. The stipulations of the Primary Health Care Act and the Child Welfare Act must be considered when arranging student welfare services. At the same time arrangements must be made to ensure social inclusion and expert services in student welfare and psycho-social support. Student feedback is to be used in developing the services.

During vocational education and training a student must be informed on the implementation of student counselling and welfare services, the services of different administrative sectors, local support networks and qualification specific health requirements. In addition to the student also the guardian of a minor student must be informed of matters related to occupational safety and labour protection during on-the-job learning.

The education provider must see that the students know the school rules that are in force in the institution. The student's own responsibility must be emphasized in the observance of the school rules and other instructions.

9.1 DESCRIPTION AND BASIC VALUES OF THE FIELD OF FORESTRY

Finland's forests are part of the Finnish ethos. The forests have helped Finns for hundreds of years in keeping the rural areas inhabited and providing a large proportion of the population with employment. The forests have also been a source of inspiration to many artists. Forests and trees have always played important roles in the ancient religions and beliefs of the Finns. This probably explains, in part, the close and warm relationship that the Finns have with the forests.

Finland's economy still relies greatly on the country's forestry and forest industries, despite the dramatic changes that have taken place in the economic environment. Over one third of Finland's net export revenues are earned by the forest industries. This proportion is greater than anywhere else in the world. If the value of the total net exports of the entire forest cluster is included, the proportion increases to close to 50% of Finland's total exports. The value of production of Finland's forest industries is in excess of 20 billion Euros. Even though the production activity utilising Finland's forest resources has increased many times, the country's forest resources and their growth are greater than ever. This is why the consumption of home-grown wood can be sustainably increased by more than 10 million cubic metres. Finland continues to live off the forest.

The term forest cluster is used when referring to a conglomeration of expertise consisting of forestry, forest industries, machinery and plant manufacturers serving forestry and the forest industries, chemicals-manufacturers serving the forest industries, automation companies, the packaging industry, the graphic arts industry, energy utilities, logistics companies, firms of consultants, and the associated education, training, and research organisations. In addition to manufacturing the machinery and plants for the forest industries, the manufacturing of forest machines and the development of the mechanised cut-to-length harvesting system (a.k.a. short wood system) have evolved into high-tech export aces for Finland. For example, Finnish companies manufacture the majority of the world's harvesting machinery, and Finland's other forest-sector companies are also leaders in their field.

Forestry is that sector of the forest cluster where the objective is sustainable well-being gained from bio diverse forests. This includes the sustainable treatment and use of the forests, Finland's foremost natural resource. Now the focus is on the formation of a conglomeration of top expertise; the participants include leading forest-industry enterprises, manufacturers of machinery and plants, universities, other educational institutions, and research institutes. A prime example of this is the Forest Cluster Education and Training Working Party appointed by the Ministry of Education with the task of examining all levels of education in forestry, the woodworking industry, and the pulp and paper industries as a whole in such a way as to take into account wood production, wood harvesting, forest-based bioenergy, and the chemical and mechanical conversion of wood. The working party submitted its final report in January 2008 to the Minister of Education, Sari Sarkomaa. The working party's development proposals endeavour to be a response to the rapid changes taking place in the forest industries and in the forest sector as a whole.

There are about 200,000 jobs in the Finnish forest cluster as a whole, and the forest industries alone have about 80,000 jobs. The number of employees in forestry is about 25,000. Typical forest vocations include the following: forest machine operator, forest worker, forest machine mechanic, log truck driver, forest services entrepreneur, forest improvement machine operators, bioenergy employee (incl. peat-extraction machine operator), forest tree nursery employee, and forest engineer and forester. According to the findings presented in various reports, the coming years hold an increasing demand for forest machine operators, forest workers, log truck drivers, and bioenergy employees.

The value attached to forests and wood is expected to increase in the future as more attention will be attached globally to the environment and to renewable raw materials. Wood can be recycled and is a renewable and carbon-binding resource; consequently, it has a part to play in mitigating climate change. Wood is expected to become an increasingly valuable raw material in the future, one which is worth using meticulously, and one whose added value can be further increased because wood can be transformed into a surprising array of uses and forms.

Moreover, wood, trees, and forests are also believed to offer increasing opportunities for recreation, enjoying nature values, and jobs for all of us.

QUALIFICATION SPECIFIC HEALTH REQUIREMENTS IN VOCATIONAL UPPER SECONDARY EDUCATION AND TRAINING

Guidelines for the admission of students into training leading to a vocational upper secondary qualification are set in Section 27 of the Act on Vocational Education and Training. A person, whose illness or injury is likely to prevent him/her participating in training, cannot be admitted as a student. Student admission into vocational education can only be limited when the illness, objectively assessed, prevents studies or would endanger the safety of the student or others. The practical problems an illness or injury causes to studies must primarily be solved using teaching arrangements and student welfare services.

An applicant is to provide education provider such information on his/her health condition as the admission process requires. Education provider must also make sure that the health condition of the person admitted is such that he/she can also cope with on-the-job learning in a way that working in the tasks in the field and achieving the qualification skills requirements presuppose.

From the point of view of a student's legal protection it is justified that he/she is not admitted to a study programme the future working tasks of which his/her health would not allow. When deciding who is admitted the various tasks related to the professions and work must be taken into consideration. It is possible that there are modules in a qualification that presuppose different health requirements and thus allow a student to make individual decisions on how to complete the training.

For student admission to have the best possible result from the student's point of view, education provider must inform applicants of the requirements of the vocational upper secondary qualification or vocational field as well as of possible health risks in the Guide for Applicants and during student admission process. Applicant's own description of his/her health condition or treatment of illness is most often enough in the admission situation.

If the legislation on or special features of the training sector or qualification in question require a person admitted into the institution to present a doctor's certificate on his/her health, it is enough that the certificate states the student is suitable for the vocational field. Student admission is conditional until such a doctor's certificate has been presented.

Student's illness or injury must not stop his/her studies or lead to a rash decision to change of profession or training sector. The practical problems an illness or injury causes in training must primarily be solved using individual teaching arrangements and personalisation that meet the student's needs. Student counselling, student support, instructing on the use of ergonomic work methods and aids facilitate completing the training. When a student falls ill or is injured cooperation between

student welfare services and occupational health care at workplaces is absolutely necessary.

In all situations where personal data specified as sensitive in the Personal Data Act, such as information on the student's state of health, the education and training provider must observe care and good information processing practice required in the provisions.

When assessing the possible health impacts of education and the future vocation on the student, the following aspects, among others, should be taken into account in connection with the basic qualification in forestry:

The health hazards and loading situation in forestry education and forestry work call for normal physical and mental fitness. The student must be free of such illnesses and ailments as would endanger his/her health or safety or of persons near to him/her. The person's suitability for various tasks may have to be considered in the light of symptoms and physical shortcomings; these include the following illnesses:

- ◆ Diabetes
- ◆ Epilepsy or other illnesses affecting the person's sense of balance
- ◆ functional balance disorders

9.3 VOCATIONAL SKILLS REQUIREMENTS, TARGETS OF ASSESSMENT AND GENERAL ASSESSMENT CRITERIA

Determining the skills requirements as well as the targets of assessment and general assessment criteria are to help education providers when drawing up curricula for modules that are not determined in the national core curriculum.

Vocational modules are formed according to and named after work entities. Skills requirements are described as concrete work outputs. Assessment criteria are determined for three levels: Satisfactory 1, Good 2 and Excellent 3.

The following criteria are meant as guidelines so that they are applied according to the objectives of core subjects and the skills requirements set for vocational modules. The criteria proposed are always portrayed against the requirements of the qualification module in question, which is to say that the work described in the criteria always means work contained in the module concerned.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	Student		
Planning one's own work, self-assessment of performance and development of one's activities.	plans his/her work but need instruction in new situation or working environment changes	plans his/her own work	plans independently work assignments and tasks he/she is responsible for
	assesses the success of his/her performance	assesses the success of his/her performance while working and copes with new and changing situations without help	assesses the success of his/her performance, justifies the assessment and assesses and develops his/her work methods and environment
Performance, independence and responsibility of work package.	performs in familiar work assignments	considers the work entity while working (e-g- where to start, where to finish and what tools and equipment to use etc.)	considers the work entity in the working environment and his/her own work as part of it
	work so that the outcome can be accepted as fulfilling the work plan and quality objectives	works so that the outcome includes some of the special requirements of the work assignment	works according to the special requirements of the workplace so that the outcome is in accordance with the objectives set
	need occasional guidance to advance in work phases	advances fluently from one work phase to another	advances systematically and fluently in his/her work adjusting it to other activities in the working environment
	follows working instructions, working hours, agreements and negotiates on discrepancies	completes given assignments independently and takes care of his/her assignments from start to finish and assumes responsibility for his/her own part of the work	spontaneously completes duties other than those assigned in his/her area of responsibility

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	Student		
Choice and use of work method, equipment and materials that suit the assignment and work environment.	uses the most common work methods, equipment and materials related to his/her work in repeating work situations, but needs some instruction (procedures, equipment and materials are defined by qualification module)	uses work methods, equipment and materials related to his/her work independently in work situations	chooses the most suitable work methods, equipment and materials and uses them skilfully in various work situations

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	Student		
Possession and application of the knowledge needed at work	uses the knowledge that is the basis for the most common procedures, equipment and materials needed in repeating work situations (i.e. the procedures, equipment and materials that have been defined in section 2), but needs guidance in acquiring the knowledge and applying it	searches and uses independently information needed at work	searches and uses information independently in his/her work in various situations and justifies the work-related decisions on the basis of the information gathered

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
	Satisfactory 1	Good 2	Excellent 3
4. Key competences for lifelong learning: a) The four key competences to be assessed in their own group in Point 4	Student		
Learning and problem solving Own competence as an employee and work development, problem solving as well as making choices and decisions.	searches for information under instruction	searches for information according to instructions	searches for information independently
	plans his/her work but needs instruction in new situations or when the work environment changes	plans his/her work and assesses its success while working	plans the assignments he/she is responsible for independently and assesses his/her competence and the success of the work and also justifies the assessment
			assesses and develops his/her work methods and work environment
	assesses the success of his/her work	accepts feedback and acts according to it	develops his/her actions on the basis of feedback
	copers with familiar situations but needs instruction and support in change and option situations	copers with change and option situations spontaneously	acts independently in different situations in a way that suits the situations and finds alternative procedures to his/her actions
Interaction and cooperation Actions in interactive situations and cooperative abilities.	abides given instructions on interactive situations in his/her own learning and working environment	considers the situation in his/her learning and working community in different interactive situations	expresses him-/herself clearly and brings forth different viewpoints constructively
	completes the work assignments he/she is responsible for but needs instruction from time to time	completes the work assignments he/she is responsible for spontaneously	acts responsibly, cooperatively and equally with different people as a member of a work community and group
	works in a familiar work community and group and asks for help from the others when needed	works with different people in a work community and group	supports and helps others and also takes into account the next work phase and employee in his/her work
Vocational ethics Activities based on vocational ethics, professional value basis and the agreements made.	abides the ethical instructions and timetables given	abides the given ethical instructions, agreements and decrees as well as timetables	acts according to the values in the work community, ethical instructions, agreements and regulations in variable situations and also keeps to timetables

Health, safety and ability to function Actions that maintain health and safe operations and maintain the ability to function.	abides the given safety instructions and does not endanger him- /herself or others	abides the work community's instructions and takes into account the safety of the members of the work community and working environment	abides the work community's instructions and takes into account the safety of the members of the work community and working environment
	ensures safety in accordance with instructions	ensures safety	ensures safety and reports on dangers and risks he/she observes
	uses safely protective equipment, tools and work methods as instructed	uses protective equipment, tools and work methods safely	uses protective equipment, tools and work methods safely
	works ergonomically in most situations	works ergonomically	uses safe, variable work methods, which do not cause excessive workload while taking ergonomics into account
Are included in the objectives and assessment criteria of the core subjects , Psychological education (1 credit) and Health education (1 credit). Respective skills requirements and assessment criteria for health, safety and ability to function are drawn up for every vocational qualification if needed.			

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
4. b) Rest of the key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Initiative and entrepreneurship target-oriented, economic and productive operations and self management.	Student Are included in the objectives and assessment criteria of the core subjects , social, business and labour-market subjects (1 credit) and also in the skills requirements and assessment criteria of the entrepreneurship part that is included in the skills requirements of the vocational modules. In addition, when necessary, skills requirements and assessment criteria for the vocational modules of each qualification have been drawn up.		
Sustainable development Observing technological, economic, social and cultural principles.	works and acts taking sustainable development into account under instruction	works and acts taking sustainable development into account	works and acts independently taking sustainable development into account and takes up development needs
Aesthetics Taking aesthetics into account while working	works according to the aesthetic principles, pleasantness of work environment and other factors that affect the appearance of the end result under instruction	works according to the aesthetic principles, pleasantness of work environment and other factors that affect the appearance of the end result	makes versatile use of aesthetic principles in the field – works to promote the pleasantness of the working environment and other factors that impact the appearance of the end result

<p>Communication and media skills Objective recognition, observation and interpretation of the media products and use of media and information technology</p>	<p>Are included in the objectives and assessment criteria of the core subjects Mother tongue (4 credits). In addition, when necessary, skills requirements and assessment criteria for communication and media skills in compliance with the requirements of each vocational field have been drawn up.</p>		
<p>Mathematics and natural sciences Numeracy required at work and knowledge of the laws of physics needed</p>	<p>Are included in the objectives and assessment criteria of the core subjects Mathematics (3 credits), Physics and chemistry (2 credits). In addition, skills requirements and assessment criteria for mathematics and natural sciences in compliance with the requirements of each vocational field have been drawn up.</p>		
<p>Technology and information technology Use of technology and information technology in the vocational field and taking into account the benefits, limitations and risks of technology</p>	<p>uses common technical and information technical systems that are needed in his/her profession, in repeating work situations, but sometimes needs instruction</p>	<p>uses common technical and information technical systems that are needed in repeating work situations</p>	<p>uses common technical and information technical systems that are needed in repeating work situations variedly</p>
	<p>chooses the machinery and equipment needed, under instruction and recognises the risks</p>	<p>chooses the machinery and equipment needed and recognises the risks</p>	<p>chooses the machinery and equipment needed independently and recognises the limitations and risks</p>
	<p>Information technology is included in the objectives and assessment criteria of core subjects (social, business and labour-market subjects). In addition, skills requirements and assessment criteria for technology and information technology in compliance with the requirements of each vocational field have been drawn up.</p>		
<p>Active citizenship and different cultures Participating in community activities and decision making with people from different backgrounds and observing the rights and obligations as an employee and citizen and abiding equality regulations.</p>	<p>Are included in the objectives and assessment criteria of the core subjects social, business and labour-market subjects (1 credit) and also Mother tongue (4 credits). In addition, when necessary, the skills requirements and assessment criteria for this key skill have been drawn up considering the skills requirements of each qualification.</p>		

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